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The Roman Villa at Bignor.

THE republication of the work on the remains of the Roman villa at Bignor, in Sussex,* written by the late Samuel Lysons, would have been opportunely timed, even if no attempt at the reproduction of the illustrations which were then published on a large scale had been made; for, in the opinion of several archæologists who attended the recent Congress of the British Archæological Association held at Brighton, the visit made to Bignor was one of the principal features of that meeting. But the publishers of the re-issue of Mr. Lysons's treatise have had a plan prepared, and several of the most important of the mosaic pavements drawn afresh from the pavements and printed in chromolithography: hence these features lend additional interest to the work and make it doubly valuable as a contribution to the works already extant relating to Roman antiquities in Britain. Some of our readers will recall to memory an account of the "Ancient Mosaic Pavements in the British Museum," printed in the *Builder*, June 24, 1882, vol. xlii., No. 2,055, p. 757, and it will be interesting at the present moment to give some account of the pavements at Bignor by way of further illustrating the subjects then taken under consideration.

The first discovery of the Bignor villa was made in July, 1811, when in a field, known as the "Berry," about a quarter of a mile to the east of the old church, a mosaic pavement was laid bare during the process of ploughing. This land was then in the occupation of Mr. George Tupper, and it still remains in the possession of Mr. Tupper's family, to whose care the present condition of the ancient remains are due. The name Berry is probably a corruption of Bury, signifying a place where some kind of local government was transacted, and in this instance it may, in all probability, be the Anglo-Saxon equivalent of a British word with similar signification, derived, in its turn, from the Romano-British uses to which the villa itself had been at the first applied. But of this we shall say more presently. On the discovery being made, the superincumbent earth was removed, and at a depth, varying from 1 ft. to 2 ft., a tesselated pavement of considerable dimensions was revealed (see *a* in plan). The general design, as Mr. Lysons records, was in good taste, and the various figures better executed than any before discovered in similar remains in this island. The pavement itself consists of two circular vignettes inscribed in squares, the first having a diameter of 7 ft. 6 in. and the second the large dimensions of 16 ft. The first of these has been very faithfully reproduced in chromolithography by the publishers of the present work, and is apparently a very successful example of the application of the chromolithographic art to the illustration of multicoloured pavements. In the centre is a representation of Ganymede, wearing a Phrygian cap on his head, and partially covered with an ample robe which is blowing open as he mounts the skies, borne aloft in a graceful floating attitude by an immense eagle with expanded wings of varicoloured hues, beautifully shaded in harmoniously arranged *tesseræ* or cubes of stone representing the plumage of the bird of Jove. In his left hand the favourite youth carries a shepherd's crook, by way of emblem symbolical of his employment while on earth; his right hand and arm are extended, as if waving "a mute farewell" to his companions and his flocks, who may well be imagined to be gazing aloft in wonder, if not in admiration, at his fate. The background is of a creamy yellow colour, and is bordered with a circular band ornamented with a kind of embattled or chequered pattern alternately disposed in compartments. Outside this is a plain narrow circular band of yellow cubes, which are enclosed in turn by a broad band of three cords interlaced in a triple plaitwork charmingly shaded with various delicate colours. The outermost circle, which is separated from the touch of this intermediate one by a narrow ribbon of light colour, is decorated with an indented pattern of two alternate colours. The corners or triangular spandrels which have been cut off the square by the inscribed circle contain, each of them, a capacious vase of semicircular body, standing on a small foot, having two sprigs drooping from the lip, each sprig consisting of a twig with a single pair of bay or laurel leaves upon it. To the right and left are two parallelograms of coloured mosaic work, consisting of a double link set in a square between four pairs of ornamental lozenges.

The larger pavement is subdivided into six hexagonal compartments, somewhat irregular in measurements, within which are depicted by the *tesseræ* a similar number of figures of dancing nymphs, in the ancient Italian style, one of them being at the time of uncovering totally destroyed, but enough remains of the other five to indicate the dress and attitudes of these indispensable adjuncts of the peculiar culture affected in Roman life. Mr. Lysons points out that, although well designed and as well executed as the nature of the work and the capabilities of the materials would allow, the lower limbs of these figures are incorrectly drawn; and in this respect, as well as in the general style of the figures and the arrangement of the ornaments, this pavement much resembles one (of which further mention will presently be made) found in the beginning of the eighteenth century at Avenches, in Switzerland, and which there is good reason to suppose was executed in the reign of Vespasian or Titus, that is, A.D. 69–79. In the middle of this large pavement is a hexagonal piscina, or sunken cistern, of stone slabs, measuring 4 ft. in diameter, 1 ft. 7¾ in. deep, with a step at about half its depth. At the bottom of this fountain, now dry, but no doubt originally a spring, is a circular hole, 3 in. in diameter, intended to carry away the water before it should overflow the pavement, by connexion with a leaden pipe, part of which, in very good preservation, was found on the outside of the wall to the southward. It is a curious coincidence that there was also an octagonal cistern in the Avenches pavement mentioned above, and these two are supposed to be the only examples of the kind which have yet occurred in connexion with Roman villas. We may, therefore, infer, if this be so, that the two pavements of Bignor and Avenches owe their community of design to the same individual or to the same ancient school of art. The room to which this larger pavement belonged had evidently been heated by means of a hypocaust, or underground system of hot-air circulation, and some of the details of the flues or supports had given way, and thus the surface had become uneven.

Shortly afterwards, part of another pavement, about 30 ft. to the west, was found (*b* in plan). This originally measured 44 ft. long by 17 ft. wide, and consisted of two large square compartments. One was mapped out, as it were, with subdivisions of various geometric figures containing part of the figure of a boy, a dolphin, a pheasant, and a cornucopia; and in one of the triangular spandrels between two hexagons the letters T R or monogram T E R occurs. The other large compartments contained at each corner an octagon with its outline marked by a guilloche or cable twist, and included within its area two interlaced squares with frames similarly decorated. In the small octagon or star-shaped panel thus formed within the squares, was an ideal portrait head of one of the four seasons of the year. Those representing the first three seasons are destroyed, but our readers may turn to the volume of the *Builder* mentioned at the beginning

* On the Remains of a Roman Villa discovered at Bignor, in the county of Sussex, in the year 1811 and four following years. By the late Samuel Lysons. London: Whiting & Co., Sardinia-street. 1885.

of this notice for some account of the emblematic representations of Spring and Summer found in the Halicarnassus pavements now in the British Museum. The figure at Bignor (see lithographic plate in this week's *Builder*) is that of Winter season, and thus helps towards the completion of the four. It is an artistic picture in coloured stones, of characteristic Roman feeling. The serious aspect of the mature face, the head closely enwrapped in thick folds of cloth, the drapery drawn tightly over the bust and shoulders, and the leafless branch held obliquely over the left shoulder, leave us no room for mistaking the symbolism intended to be conveyed to the eye. In the sides of the pavement, between the seasons, were depicted elegant vases with fluted bowls, and sprigs carrying heart-shaped leaves and stars of various colours, sets of circles composed of cabled twists enclosing plaques adorned with quatrefoils, and pairs of links interlaced at right angles ; and the mæander or key-fret, with lengths of guilloche in narrow rectangular bands, fills up the outer border of the pavement. Outside all, as in the former example, so also in this, the remaining floor space of the room was filled up with larger squares of red brick or stone, of about 1 in. or 1¾ in. diameter.

More precise investigation was stimulated by the discovery of these pavements, and in the following years, 1812 to 1815, the foundations of the walls were laid open, and the plan of the building traced ; and it was soon apparent that a Roman villa, if not, indeed, a palace, of considerable extent had been discovered. The room *a* (see plan) appeared to be rectangular, 19 ft. by 30 ft., with a recess on the north 20 ft. 10 in. wide, making total length, north to south, nearly 40 ft. The walls were very thick, 2 ft. 6 in. on the north, east, and west ; 3 ft. on the south. But the walls on the east and west were not quite parallel, a not unusual circumstance in buildings of the Roman ages. The same irregularity is noticed in the room *b*. This room *a* was probably a banqueting-hall, and Mr. Lysons conjectures that the recess was well calculated to answer the purpose of the high table in our public halls. The walls had been adorned with paintings on the stucco, that of the room *b* had plain red coloured walls. In the room *c* a fine and perfect pavement, of great beauty of colour and elegant geometric design, relieved by introduction of curvilinear accessories, such as interlaced links, lanceolate and cordiform leaves, and guilloches, was found. In one side of the wall of this room was a doorway 3 ft. 3½ in. wide. On the south of the great room *a* were disclosed the foundation walls of a long *cryptoporticus*, *d*, 150 ft. long by 10 ft. wide. This was an enclosed gallery or cloister, so to speak, in which the Romans took walking exercise under shelter. It had a red and blue pavement, with ornamental mæander design.

In a line with the great room *a* the foundations of other rooms, *f*, *g*, *h*, *q*, *r*, *s*, *t*, *u*, *x*, *w*, were found in the positions indicated on the plan, and some of these had tesselated pavements on their floors. The fire-place of the hypocaust by which the system of hot-air circulation was carried on, was discovered on the north side of the north wall of the room *c*. It was composed of two walls, 18 in. thick, and 18 in. apart, projecting 16 in. from the wall; between these walls an arch was met with, formed by bricks projecting beyond each other, and communicating with various flues under the floors. The room *k* had a very fine pavement, 22 ft. by 19 ft. 10 in., with an apse at the north end, 10 ft. diam., and an anteroom *i*, with doorway 4 ft. wide. This large room was enriched with a very fine pavement, unfortunately seriously injured in parts, but with its north end nearly perfect. The rectangular part contained panels holding figures of Cupids or genii dancing in the manner of Bacchantes, figures of urns with fruit and foliage, and cornucopiæ. It was divided from the apsidal part by a long and narrow frieze containing twelve Cupids or genii, winged, attired as gladiators, in four groups, each consisting of a master or instructor and a pair of combatants in the various stages of the mimic contest. The apse, or semicircular part, is surrounded by an elegant scroll of foliage, enriched with heart-shaped and bell-shaped flowers and roses, springing from a late amphora, or two-handled vase, set on a narrow foot and having a ball in the stem. This border encloses an area of semicircular form, paved with creamy yellow *tesseræ*, holding a circular panel, within which is represented the bust, perhaps, of a female, full-face, the head adorned with a chaplet of flowers, and with tresses of dark hair on the shoulders, which are not draped. The head is surrounded with a nimbus like that found on early representations of Christian saints, of a light blue colour, few examples of which appear in any of the remains of ancient art ; and, according to Mr. Lysons, only one other is recorded as having been discovered in a work of this nature. The nimbus, in this instance, appears to indicate that the head is that of a deity, and if it be not a relic of pre-Augustine Christianity in Britain, and commemorative of Our Lord or the Virgin Mary, it may possibly be referred to Juno or Venus. On each side of this circular plaque are a cornucopia on a branch, and a festoon of foliage tied at each end with a coloured ribbon, with a pheasant holding a branch, perched on the middle of the loop. The pheasant is not particularly emblematic of Juno, to whom the peacock would be more appropriate, nor to Venus, whose emblem of a dove, or a goose, is frequently met with in ancient art, but the bird may be the proper,—although forgotten,—emblem of a local divinity, whose bust is here portrayed, unless the first-mentioned theory of its Christian origin is accepted.

On the west of this important apartment—(may it have been a church?),—were found the remains of a sort of enclosed portico, *m*, which appears to have had a terras floor, and a range of small columns of the Doric order, but evincing, in truly Roman keeping, a good deal of irregularity in the mouldings. The small room or lobby, *l*, had two doorways. On the south of the room, *b*, was a room, *n*, 14 ft. 6 in. by 17 ft., and after an interval of 44 ft. further south, in a line, another room, *o*, 16 ft. 5 in. by 15 ft. 6 in., with part of its floor covered with a tesselated pavement, of coarse style, formed of light brown stone cubes. This room was of interest, because of its fireplace against the west, or outer, wall, with a hearth formed of four square bricks ; the fireplace being similar to, but smaller than, that already described, for the opening in front was 19½ in.

The next discovery in connexion with this extensive building was made in the adjoining field, known as "Town Field," where at the east end of the *cryptoporticus* a second gallery, *p*, was found, 10 ft. wide and 68 ft. long, thus making the entire extent of this ambulatory or cloister 227 ft. in one line. Part of a tesselation was also found here. The room *s* was paved with bricks 10¾ in. square ; the room *t* with large flagstones. The walls in this part of the building were constructed of the stone of the country, unhewn and plastered, and varied in thickness from 2 ft. to 3 ft. The semicircle *f* indicates the foundation of a building 8 ft. 10 in. diameter. The wall on the east ran down from the gallery in a sloping direction, and there were no apartments on this side. After following the direction for 133 ft. the remains of a corresponding ambulatory, *z*, communicating with a series of no less than twelve rooms, were met with. Few of these rooms were paved ; room 1 is nearly a square, of 25 ft., with a mosaic pavement of stars, interlaced squares, guilloches, and in the centre a circular plaque containing the full-faced head of Gorgon or Medusa, girt with fourteen snakes issuing in a kind of wavy radiance from her hair, and enclosed in two embattled borders of black and cream-coloured *tesseræ*, holding an intervening cable-twist of four lines, black, red, yellow, and white. Portion of a small stone column of irregular Doric style was found lying on this pavement, measuring 2 ft. 2 in. in the shaft, 14¾ in. diameter of base, and from the indentations on the pavement produced by the fall it has been reasonably conjectured that two pillars stood at some height above the floor-line, at the sides of a doorway leading to room 2, which was paved with tesselations and furnished with a cold bath of the shape shown in the plan, 7, measuring 18 ft. by 12 ft., and fitted with three steps, in all 3 ft. 2 in. deep below the floor level. Many fragments of a neat cornice of stone 2 in. wide, with an ogee moulding, were found in the bath itself. Room 3 revealed remains of an extensive hypocaust, with its fireplace on the outer south wall. Room 5 had a pavement of coarse mosaics, and a hypocaust (which communicated with the previous one by a brick arch, 3 ft. 9 in. wide) 3 ft. 2 in. wide. The remainder of the plan does not need special explanation.

The great extent of the foundations, the large number and goodly size of the apartments, the richly-worked pavements, the numerous hypocausts, and other circumstances clearly point to the fact that as far as the hitherto imperfect investigations go, the building was the habitation of some personage of great political importance; quite possibly it was the palace of a legate or governor of a province. The district around Bignor was known as the province of the Regni, with a capital believed to be at Regnum, the site of modern Chichester, ten miles distant. This, according to Mr. Lysons, but not undisputed by some archæologists, was in all probability reduced to subjection by the Romans under Vespasian, in the reign of the Emperor Claudius, about A.D. 49-50, as re-recorded by the historian Suetonius. Cogidubnus, or Cogidunus, a British prince, who had submitted to the invaders, was appointed legate in England by Claudius, and he governed in this province of the Regni. Fortunately, an undoubted relic of the period of Cogidubnus is still extant. It is an inscribed stone slab about 3 ft. by 1 ft. 6 in. when perfect, and was found in 1723 at Chichester. It is now in the possession of the Duke of Richmond, who has set it up in the wall of a temple in the garden at Goodwood. Enough remains of this stone, which is cracked and imperfect in some places, to show that by order of Cogidubnus the "Collegium Fabrorum" erected at Regnum a temple dedicated to Neptune and Minerva. Neptune would naturally exercise a potent influence in a place so near the sea as Chichester, and in a district so well furnished with a sea-board as Sussex; and, as if in corroboration of this fact, a colossal marble head of a deity, presumably that of the principal statue which graced the Temple of Neptune, still lies in a sadly mutilated condition at the garden door of the Bishop's palace at Chichester. In the absence of better suggestions, may not this be the head of the Neptune set up in obedience to the command of Cogidunus, and may not the palace at Bignor have been the dwelling actually inhabited by that prince? We may even go further, and, without overstepping the bounds of probability, see in the plan of this villa at Bignor the handiwork of an architect specially sent from Avenches to carry out for his princely British patron a work intended to imitate, and even to emulate, Roman fashions in building and decoration. It is well known that considerable buildings were erected in Britain during the reign of Titus, and Tacitus, who is the authority for this statement, also declares that the Britons erected temples, houses, porticos, and baths by the advice and with the assistance of Agricola. Mr. Lysons saw in some of the tesselations at Bignor grounds for referring them to the age of Titus, and from the account of the Avenches mosaic found in 1708, and described by the Seigneur de Rossan in his "Recueil d'Antiquités de la Suisse," the two principal pavements are almost identical as to the occurrence of a central cistern or foundation; as to the figures of dancers in octagonal compartments and with their lower limbs incorrectly outlined ; and as to the nimbus which at Avenches adorns the head of Bacchus and at Bignor a corresponding head of the so-called Venus. There is also a general agreement between the style of ornamentation in both of these relics. Mr. Lysons also saw in some of these pavements a striking resemblance to some tesselations found at Pompeii which could not have been of later date than the reign of Titus. The ball in the stem of some of the vases is a detail which

also occurs under similar conditions at Pompeii.

In conclusion, a few words may be added by way of a lesson to be learned from the inspection of the Bignor pavements. The practical value of the details of the classical ornamentation cannot be over-estimated. Our early illuminated manuscripts and sculptured crosses indicate to how great an extent the illuminator and the stonecarver drew upon Roman tesselated patterns,—far more abundant a thousand years ago than they are now,—for their elegant borders and panels; and now that mosaic pavements have become important factors in the decoration not only of public buildings but even of private dwellings, the designers of the new patterns will do well to study the graceful curves and symmetrical arrangements seen at Bignor and elsewhere. Many of these ornamental designs will be found reproduced in a work by Mr. T. Morgan, F.S.A., on "Romano-British Mosaic Pavements," which is on the eve of publication. What we said in 1882 (in the article already referred to) as to the precarious condition of many Romano-British pavements *in situ*, is forcibly true of those at Bignor. We do not desire to depreciate in the slightest degree the intelligent care which Mr. Tupper has bestowed upon his precious antiquities. Had he not exercised great forethought, and incurred great expense in building houses over them, they would probably have, long ere this, have crumbled away under the plough; but the fact is, that the sinking of foundations, never very stable, and the slow but sure growth of roots and rising of damp has displaced numbers of the cubes, destroyed the cohesive nature of their bed, and, in some instances, seriously impaired the beauty of the work. These conditions, which must always go on with greater or less destructive agency, coupled with the treading of visitors over the borders of the pavements, must eventually result in finally reducing what are now, in spite of many flaws, fine and fairly well preserved relics of Roman Britain, to mere fragments of inferior value. Happily Sussex has its Museums at Brighton and Chichester, than which no better or securer resting-places could be found, and if the owners of these important remains were properly compensated by the Museum or the State for the removal of this property, in which, in so far as tradition, and history and art, go, the whole nation has an inalienable interest, the pavements could be rebedded and removed, without the least danger of injury or the slightest reproach of restoration, from a perilous position to one of lasting security.

MELROSE, DRYBURGH, AND ABBOTSFORD.

To those who have not seen the far grander scenery of the Highlands, or even of Argyllshire and the Isle of Arran, Teviotdale and the valley of the Tweed will be one of the most attractive districts for a pilgrimage. In the spring and autumn the colours of the larches, firs, and beeches which fringe its sides are as fine and as varied as they were when Sir Walter Scott chose this said valley as his future home; and the fact that he spent here the best part of his life, on the banks of the Tweed which he loved so well, and that he lies in the sleep of death within the sound of its rippling waters, will render the whole neighbourhood sacred ground for many a generation to come.

Both Dryburgh Abbey and Melrose can easily be visited in the same day with Sir Walter Scott's old home at Abbotsford. This is rather nearer to Galashiels than to Melrose; but it is more accessible from the latter place, where the North British Railway will deposit the wayfarer close to the ruins of its famous abbey. Unless, however, he makes up his mind to spend a couple of days at least in this pleasant pilgrimage, it goes without saying that the tourist will not be able to follow out the oft-quoted advice of Sir Walter, and "visit it by the pale moon-light." But the ruined abbey seems very fair indeed under the changing colours of a bright summer day, when the cloud and the sunshine alternately prevails. It is a pity, perhaps, that the abbey is so closely hemmed in, on three sides at least, by modern houses; for if it had stood apart and lonely in the meadows, like Tintern or Netley, or Dryburgh, the scene would have been surpassingly beautiful. There is truth in the remark of honest Tom Purdie, who had been educated in taste by Sir Walter, "See ye now then the sun glinting on Melrose Abbey? It's no aw bright, nor it's no aw shadows neither, but just a bit screed o' light here and a bit daud o' dark yonder like; and that's what they call picturesque; and, indeed, it maun be confessed it is unco bonnie to look at!"

The general view of Melrose is familiar to every reader of Sir Walter Scott, as it forms one at least of the illustrations of almost every edition of his works, to say nothing of the more recent art of photography. Billing, in his "Baronial and Ecclesiastical Antiquities," remarks: "The student of architecture will find that the building, both in the great features of its design and in its decorations, has a lightness and delicate symmetry quite peculiar. The stone, skilfully chosen for the artist's purpose, is capable of remarkable delicacy of cutting, and preserves its sharpness against even the mouldering winds of Scotland. In this it much resembles the stone of which Strasburg Cathedral is built, and there is a similarity of style in the two, and especially in the masses of masonry being disguised by light open decorations, which seems to hang over them like lace. There are some features in which it is not unlike Antwerp, as in the turrets or machicolations at the corner of the tower, which Scott adapted to his mansion at Abbotsford."

The building, which is now standing in such picturesque ruin, has had three predecessors. The first abbey, which, by the way, was at Old Melrose, somewhat nearer to St. Boswell's, had its origin as far back as the seventh century, when it was founded by the saintly Aidan; the second was built in 1136, by King David I., who placed therein a community of Cistercian monks from Rievaulx. During the wars of the succession this building suffered grievously, and it was finally demolished by Edward II. It was soon afterwards rebuilt by Robert the Bruce, whose heart, it is said, reposes in front of the great east window of the present fabric, where it was placed after Douglas had failed in his attempt to carry it to the Holy Land. Bruce's building was destroyed at the invasion of Scotland by Richard II., but was soon rebuilt; and this is the work now standing, though much altered by subsequent restorations and repairs, but not much of the monastic buildings except the church remains. The church is cruciform in plan, and the flowing tracery of many of the windows is very elegant and partakes of the Flamboyant character. The principal feature of the chancel is the great east window, of five lights, of which Scott has given such a poetical description.

By a little poetical licence, or poetical inaccuracy, Scott terms the great east window an "oriel," which it, of course, is not. Entering the ruins by the west door-way, the visitor has before him a piece of barbarism, in the shape of heavy piers and circular arches, which were erected early in the seventeenth century, when the nave was converted into a Presbyterian church, and which completely hides from view the elegant Early Pointed arches of the original building. It is possible, however, that they may have been intended to serve, as they still serve, for props, and so have helped to secure the fabric from falling at a time when no architect could have repaired the loss. The south aisle is divided into a series of chapels, each of which serves as a family burial-place. The tracery of the windows in the aisle is somewhat of the Flamboyant character, and that of each window is different in design; but these are surpassed in beauty by that of the south transept, which is 24 ft. in height, and is divided into five lights. An aisle of two bays, separated from the transept by pointed arches with clustered columns, runs along the east side of it. The north transept has an aisle on the west side, with an arcade and fragments of early ornamentation. The whole interior, in fact, is one of simple grandeur, looked at from whatever point of view the visitor chooses.

The exterior of the abbey still retains many specimens of the carved work, both sacred and grotesque, with which the building was originally enriched. Along one wall of what remains of the cloisters, on the north side of the nave, is a series of trefoil-headed arches, with mouldings of great delicacy.

Billing, in the work above quoted, writes:—"Some architectural critics treat Melrose as a mixture of Early English and Perpendicular, while some features from the intermediate neighbourhood, and even from the Earlier Norman, somewhat disturb the amalgamation. But this is treating by rules derived from English analysis a building which was free of all English principles. After the War of Independence the ecclesiastical architecture of Scotland rather followed Continental than English models. The style which Rickman classes as Perpendicular was peculiarly of English growth. It was never adopted in Scotland, though certainly the style of Melrose makes a nearer approach to it than any other modern building." What remains of the sacred edifice is sufficient to stamp it as an architectural gem which will bear the minutest examination. This, of course, must be done in the light of day, in spite of Scott.

In 1822 Melrose was secured against further decay by the Duke of Buccleuch at the urgent entreaty of Sir Walter Scott. One would have thought that the idea of a railroad near Melrose would have grieved Sir Walter's heart, but we learn from Lockhart's "Life" that he joined his neighbours in welcoming the idea many years before it was carried out.

Scott loved to "lionise" his visitors over Melrose, and to act as their guide, being so familiar with its every detail. Moore, for instance, tells us that with the assistance of the sexton, a shrewd sturdy-mannered original, he (Scott) explained to him all the parts of the ruin, and jokingly offered to give the worthy sexton a statue of the Virgin and Child to fill one empty niche, among casts taken from the abbey ornaments, if he was not afraid of having his house pulled down about his ears by his Puritan neighbours.

Melrose is undeniably the finest Gothic ruin to the north of the Tweed, and its sacredness and importance may be inferred from the fact that the shrine of St. David here was one of the four chief places of pilgrimage in Scotland during "The Ages of Faith." The story goes that Cuthbert was once buried here, and that his body floated in a stone coffin down the Tweed to Tilmouth. Legends and traditions, it may be remarked, cluster thickly around the grey and lichen-covered walls, not only of the Abbey of Melrose, but also those of Dryburgh and the other sacred fanes of Teviotdale, —legends which have been handed down from generation to generation for ages past.

From Melrose it is but a walk to Dryburgh, and the pilgrim can choose his path on the right or the left side of the Tweed. Whatever route he takes he will be rewarded by lovely scenery, on which Sir Walter's eye so often rested, and almost all the way he will be within earshot of the Tweed's rippling waters. If he goes through St. Boswell's he will have to turn down a shady lane, and cross a foot-bridge, and then to walk another half-mile before he reaches the gates of Dryburgh. So thick and close are the trees that, at all events in summer-time, he will find himself almost face to face with the ruins before he is aware of it. Here, at all events, the modern builder and improver has not been able to effect an encroachment. The most peaceful seclusion reigns around, the shade is perfect, and the grass, even in the hottest summer, is deliciously green and soft to the tread. The old Austin Canons may have preferred to be near a town and the hum of voices, but the Præmonstratentians, like the Cistercians, loved a secluded spot, such as Dryburgh, which is beautifully situated amid grand old trees and verdant fields.

Of the Abbey Church, little or nothing is

left but the north transept, with its east aisle, and a small portion of the main aisle, the western entrance, and a small chapel dedicated to St. Moden. This chapel is a small apartment in one corner of the cloister-court, and belongs to the "transition Norman" period, as its pointed oval-shaped window testifies. All the other windows in the original work have semicircular arches, like the doorways. In St. Moden's Chapel there appears to have been an altar, as the remains of a piscina are to be seen in one of the side walls, and on the floor immediately below is an ornamented stone basin, having a drain passing into the ground. In the transept aisle, called St. Mary's, is the burial-place of the Erskines, and hard by is that of the Scotts and Halyburtons. Two pointed arches separate this chapel from the nave. An Early English window alone remains to mark the portion of the south transept. The Chapter-house is on a lower level than the rest of the church, and is fairly preserved. It is a long plain building, with a cylindrical or barrel-vaulted roof, and an arcading on the east side formed of Norman arches interlaced. Part of the walls of the refectory are left; and in its gable end is a handsome rose-window. Close by are the bare walls of the library and of the chamber known as the abbot's parlour. All these places were closely associated with the domestic life of the monks; and, although they are all roofless, it is gratifying to know that they have been thus far preserved from the ravages of time and the spoiling hand of man. Several vaulted passages run through the buildings; and under the refectory, which occupied the whole south side of the cloiser-court, are the almonry and wine-cellars. In one corner of the cloisters are three dungeons, in which, it is said, the "refractory" brethren were kept and punished. In one of them a hole, large enough to admit a man's hand, has been cut in the wall, into which the prisoners' hands were thrust and fastened with a wedge. The whole place is so low as only to admit of its occupant kneeling upright, and the only light admitted into this gloomy recess was by an opening 2 in. wide.

The arms of the last abbot, James Stewart, are still visible above the staircase leading to the dungeon.

The visitor is naturally very sorry to see how little of the church remains here,—far less than at Melrose,—but that feeling of regret is lessened by finding that the other conventual buildings are far more perfect. Indeed, the cloister court, the abbot's parlour, the chapter-house, the library, and St. Moden's Chapel, are all more or less entire, with the exception of their roofs. Time, on the whole, has dealt gently with these ruins, and the grey stone harmonises most pleasantly with the bright turf and dark evergreens around it. Tread softly and gently, for in the corner of one roofless aisle, sleeps the poet whose writings have consecrated not merely Dryburgh, but Scotland. Here his remains were placed, amidst the tears of his tenantry, and friends, and neighbours, on one of the last lingering summer days of 1832, in the presence of a crowd of mourners from all parts. The spot is one which he chose during life, and he rests among his kindred of the Halyburtons, as he would have wished.

Dryburgh Abbey was never an establishment of great size or wealth. It was founded about the middle of the twelfth century by Hugh de Morville, Lord of Lauderdale, and endowed with the patronage and revenues of the churches of Dryburgh, Lanark, and Pedynane, besides lands in other parts. In 1322, the abbey was burned by Edward II., on his retreat from Scotland, but was soon after rebuilt, only to be again destroyed by fire in 1544, by the English, under Sir Brian Latoun. It does not seem to have been again rebuilt, as traces of the effects of fire are visible on one or two of the fragments of columns and arches yet remaining.

Returning to Melrose, we take an upland road to Abbotsford. There can be no wonder why Sir Walter should have chosen Abbotsford as the site of his future home. A farm, or "holding," of a few acres was for sale; it overlooked his beloved Tweed; it was not far from Archiesteel, where he had spent the first years of his married life; it was near to the domains of the Kerrs of Cessford, whom he admired, and also to those of the bold Buccleuch to whom he looked up with that loyal regard which marked all the members of a class in the old feudal times. The acquisition of such a property would give him a local habitation and a name to match it; he would be Scott of Abbotsford. At Abbotsford, Scott writes:—"We dwell among our own people," and "we were not out of reach of our Edinburgh friends." And a proud day it was for him, as we learn from his son-in-law, Lockhart, when the deed was signed, which made him the "superior" of that demesne. He would plant the hillside; he would see his own woods spring up; he would design a small baronial mansion, which should serve as his castle and enable him to realise in stone some at least of the scenes which he had described in poetry and prose; he would here exercise the hospitality of a Lowland laird. He lived to do all this, and we now see before us a baronial hall, whose battlements and gables, and mullioned windows, would have delighted the eye of Horace Walpole; but scarcely had he completed the building and laid out the grounds, much as we now see them, when death snatched him away from his beloved home; but he left a worthy and loving son to succeed him and to keep up his name.

The mansion of Abbotsford is shut in from the main road by a high wall, and but little can be seen of the house on this side. Entrance is obtained by visitors through a small postern gate, which leads to a side door and small hall, in which is a statue of "Maida," Sir Walter's favourite deerhound. Having duly paid his or her shilling (the sum charged for admission),—which, by the way, we believe, is put to charitable purposes,—and entered their names, the visitors are conducted to the library, a handsome apartment, fitted up in the Gothic style, and containing a collection of some 20,000 volumes, which have become heirlooms in the family. The adjoining study and small octagon dressing-room remain in much the same condition as when occupied by the poet. Here are preserved his chair, desk, and writing-case, the stick which he used when out walking, and even the identical clothes which he wore. The dining and drawing rooms contain numerous relics and memorials, and a few portraits of distinguished personages whom he reckoned among his friends and guests. There is also, in the latter room, a bust of the poet by Chantrey. A room, called the "Armoury," is a veritable museum and storehouse of curiosities.

The house was built, as it were, piecemeal; it was very costly, and its growth very gradual. Though twice it has been carried, in the female line, into other houses, the name of "Scott of Abbotsford" survives in Sir Walter's descendants. The house still stands, an object of pilgrimage to all the world. The gardens still flourish and delight the eye with their variegated hues as they did in Scott's time; the shrubbery and lawn, on which he was wheeled during his last illness after his return from Italy, still remain as of old, preserved with almost filial care; but the plantations have grown into groves and noble woods. The Vale of Gala still smiles below, and the fair Tweed still ripples and shines in the hollow, as it did on that September day when the poet breathed his last in his drawing-room at Abbotsford, and it still reflects the purple gleam of the autumn woods, whilst the little "linn" near the garden still trickles in summer and brawls and foams in winter,—

> "For men may come, and men may go,
> But I flow on for ever."

Great Fire in Clerkenwell.—What appears to have been probably the largest fire that has occurred in London since the great fire in Tooley-street, more than twenty years ago (not excepting the large fre in Wood-street three or four years since), broke out early on Thursday morning in a block of warehouses at the junction of Goswell-road and Clerkenwell-road. No fewer than fifteen large warehouses (all of them comparatively new buildings) are reported to have been destroyed.

NOTES.

THE Metropolitan Board of Works have wisely made public the Report of the Works and General Purposes Committee in regard to the houses in Lisson-grove, about which the attacks of the correspondent "Sanitary" in the *Times* have been directed against them. They admit that irregularity has occurred in the "Dangerous Structure Department," or, as they finally put it, that the Superintendent of that Department "gave an extension of time," in regard to the condemned structure, "without the sanction of the Board." At the same time they urge, not without reason, that the extension of time was made on grounds which would probably have been accepted as reasonable by the Bench, if the matter had come into a Police-court. The charge that an account had been rendered to the outside owner of property (house No. 33) for the repairs ordered, and none to the owner of No. 35, who was a Member of the Board, is shown to be entirely untrue, the accounts in question not having been made up at all at the time "Sanitary's" charges were made. There appears to have been too much facility given to the owner who was a member of the Board, for getting extension of time in an informal manner, and the investigation will probably check any such irregularities in future. But in the main the Board appear justified in regarding the attacks made on them as characterised by much exaggeration, and the latest aspect of the affair confirms us in the feeling we from the first entertained, that there was personal *animus* of some kind behind the letters of "Sanitary." A public-spirited sanitary reformer does not generally direct elaborate and repeated attacks against one small piece of unimportant property.

WE observe that a motion is to be brought forward in the Salford Town Council recommending that an application should be made to Parliament for power to subscribe to the capital of the Manchester Ship Canal Company. If the motion is carried, and the question comes before Parliament, it is to be hoped that the Legislature will show plainly that it will not sanction town councils becoming shareholders in joint-stock companies. There is no difference in principle between the Ship Canal and any other commercial undertaking favourable to the trade of a particular locality. If municipal bodies are once allowed to have an interest in commercial undertakings an enormous field is opened to all sorts of jobbery, and the ratepayers' money will never be safe. It is the function of municipal bodies to govern the locality to which they belong, not to embark in speculative undertakings, however much they may be likely to improve the trade of the place. It is greatly to be regretted that the idea of such a gross departure from the principles of civic government as this should ever have been contemplated.

"ABOVE the intakes of the water companies," report the Conservators of the Thames, "whence the chief part of the London water-supply is derived, the state of the river is satisfactory." "This portion," said the *Lancet*, on the 18th of September, "having received much sewage pollution in the upper reaches, can never be regarded as entirely satisfactory. . . . . At the mouth of the Wey we found, on a recent inspection, that the water coming through the lock was black and dirty, and had a bad smell." Which of these two conflicting statements is correct? This much is certain, that the Wey receives much raw and untreated sewage, besides the discharges from paper-mills and tanneries. As to the former, "The rags," says Mr. Higgins, in "The Pollution and Obstruction of Water-courses," "after the dusting process, and esparto grass, from which paper is manufactured, are treated for several hours with a strong solution of caustic soda, during which the silica contained in the raw material is dissolved, together with any grease present. The dark brown liquid obtained from this process is soapy and highly polluting, as is also the water subsequently used in washing the boiled material. The pulp is bleached with

a solution of chloride of lime. The preparation of this solution, as well as the caustic soda when made on the works, gave rise to a refuse consisting of lime and calcium carbonate." As to tanneries, the same authority says, "The waste liquor from tanneries may, for all practical purposes, be regarded as concentrated sewage, possessing from five to ten times the manurial value of the latter." Esparto liquor from paper-mills, according to the reports of the River Pollution Commissioners, contains 2,826 grains of solid matter per gallon in solution, and spent tan liquor contains 5,921 grains per gallon. The former contains 53 grains and the latter 25 grains of organic nitrogen in the gallon. It is thus not surprising to be told that the water of the Wey as it flows through Guildford contains a quantity of chlorine equal to that in 2·42 grains of common salt per gallon. which is very nearly one-fourth of the proportion of 9·90 grains per gallon contained in London sewage. We fear that these facts tend to tip the scale in favour of the *Lancet* rather than in that of the Report of the Conservators of the Thames.

THE insanitary condition of the dwellings of many of the Windsor poor is unfortunately no new complaint. In 1871, we personally inspected the poorest quarters of the Royal Borough, which almost touch the Castle walls, and we reported in the *Builder* on the lamentable state of things then existing, as both dangerous and demoralising. In 1873 the Rev. Arthur Robins became Rector of Holy Trinity, and from that hour to this he has never ceased to expose and denounce that which is so full of material and moral evil. Two months ago the *Lancet* sent its Special Commissioner to Windsor, who found that the slums there were,—as we had described, and as Mr. Robins had reported,—a local peril and a national disgrace. The Rev. Arthur Robins now proposes that in the Royal Borough the jubilee of Queen Victoria's reign should be fitly honoured and commemorated by giving to the poor people of Windsor sanitary dwellings and human homes. This is, indeed, what the late Prince Consort would probably have done long since, had he lived; and if Windsor is really ready to fulfil its duties and obligations as a Royal Borough, it will not miss this opportunity of recognising its responsibilities, and of thus most appropriately offering its highest homage to the Queen.

THE Manchester Canal scheme is to be followed, it appears, by one for improving the navigable channel of the Dee up to Chester, so as to receive 15 ft. of water up to Chester. Inland navigation seems to be the order of the day. Three centuries ago the Chester authorities referred to Liverpool in some Parliamentary document as "a creek of the port of Chester." Those times, however, will hardly be revived by any dredging of the Dee channel now.

THE Governor of the Isle of Man merits the gratitude of all interested in archæological research for the valuable "memorandum," which at his request Prof. Boyd Dawkins has recently prepared with a view to assisting the passage through the local legislature of a Bill to preserve from destruction the many antiquities of the island. The prehistoric remains alone, as Prof. Dawkins points out, are more numerous in the Isle of Man than in any other equal area of the British Isles, and, said to say, remain as yet entirely unprotected from the wanton destruction which has to so great an extent been arrested in England, Scotland, and Ireland by the "Ancient Monuments Act" of 1882. The interest of the antiquities of the ancient kingdom of Man is not a purely local one; as Prof. Dawkins urges, they merit preservation on the score of the light they throw not only on early Christian art, but on the complicated and little-known relations of the Northmen and the Celtic population of the British Isles. The principal objects to be attained are, first, the protection of the existing remains; secondly, a notice, where possible, of all those which have disappeared; and, lastly, the record of the old Manx place-names. The Runic crosses, of which many well-known specimens exist in the island, are, it appears, rapidly disappearing, and, it is urged, should be immediately placed under shelter. The island is also especially rich in prehistoric remains, camps and ramparts, stone circles, tombs, tumuli, cairns, and cists; these are, for the most part, unrecorded, or very incorrectly marked, on the Ordnance maps. Long protected by local superstition, they are at present being ruthlessly destroyed; among them the interesting Braddan alignements should certainly be protected from further injury. It is equally desirable that all local traditions respecting these antiquities should, as soon as possible, be recorded before being for ever lost; the work, in fact, systematically carried out which has been so ably commenced by the Isle of Man Antiquarian Society. It is sincerely to be hoped that the Manx Legislature,—itself an interesting archæological, though, none the less, a very practical, survival of a distant past,—will not neglect to support their Governor in his laudable effort.

A MEETING of the Associates of the Institute of Architects will be held on Monday evening next, at 9, Conduit-street, at half-past seven, to discuss the provisions of the proposed new Charter as affecting the Associate class of members. The discussion is expected to turn chiefly on the question of the right of the Associates to vote in respect of the passing of by-laws affecting their interests. Mr. Mark H. Judge, A.R.I.B.A., intends to move the following resolution:—

"That, in the opinion of the Associates of the Royal Institute of British Architects, it is most desirable that the new Charter should give them a voice in the making of by-laws, and it is therefore resolved,—That the Council be asked (1) to amend the 23rd clause of the proposed new Charter by adding the words, 'Every Fellow shall be entitled to two votes in respect of the making, altering, revising, suspending, or rescinding of any by-law'; (2) to amend the 24th clause by leaving out all the words after the words 'Election of Fellows,' and thus provide for the voting power in respect of by-laws being in proportion to the subscription of members."

THERE seems to have been a question raised at Nottingham in regard to the quality of stone in use in the new Law Courts, which are being erected from the designs of Messrs. Verity & Hunt. There was a discussion on the subject in the Town Council last Monday, when it was stated that a memorial had been received on the matter from the Federated Organised and Building Trades' United Councils, who, as representing 7,000 ratepayers, urged that the quality of the stone in the new buildings was inferior to what it ought to be, best Darley Dale stone having been specified. The Operative Stonemasons' Society and the Nottingham Ratepayers' Association presented similar memorials, and a motion was carried referring the matter to the Buildings Committee for consideration. The architects state that they have specially selected the stone, which they had every confidence in; and the Borough Engineer, Mr. Tarbotton, a thoroughly competent witness, stated that he had examined the stone that was being used, and that it was Darley Dale stone of excellent quality and all that could be desired. Our impression, judging from the reports of the matter by the local press, would be that some trade interest was probably at the bottom of the objections raised.

WE have had brought under our notice a new method of stone-working by machinery which has been developed and brought into its completed form by Mr. M. Powis Bale, who has already contributed so much to the development of stone-working machinery. The new method differs in principle from that of Mr. Bale's mechanical system of stone-cutting and dressing already described in these pages, as the stone is not really *cut* at all, but shaped by the erosion of sand and water under the action of iron scrapers or rubbers of the required section. The advantage of this system is that it does not shake or jar the stone, and leaves a perfectly smooth and very weather-resisting and compact surface. Work like the fluting of a pilaster can be accomplished with this machine at 2s. per square foot. Of course, we are not in favour of ornamental work by machinery, but such mechanically-repeated features as the flutes of a column or pilaster, and other surface treatment of the same class, loses nothing by machine treatment, and for this class of work the process may prove very useful.

WE have received the following letter from the Manager of the Patent Grano-Metallic Stone Company:—

"Sir,—With regard to the paragraph published by you in last week's *Builder*, respecting the Patent Grano-Metallic Stone Company, I beg to inform you that no agent or traveller has any authority to offer commissions to engineers, architects, or others. I must ask you to give the same prominence to this letter as you gave to the notice of last week.

I am, Sir,
Your obedient servant,
J. H. Bryant,
Manager Patent Grano-Metallic Stone Co.
To the Editor of the *Builder*."

Of course we comply with the request to publish this disclaimer; but it still rests with the Company to explain how it came about that a person professing to be acting for them, and enclosing their printed card, has been writing to architects offering 5 per cent. commission in their name.

THE exhibition of the work of the Photographic Society, now open at the rooms of the Society of Painters in Water-Colours, compares curiously with the class of exhibition we are accustomed to see in the same rooms. We feel how great a part of the interest of art lies in the idiosyncrasy of the artist and his method, when we compare the intellectual charm of a good water-colour exhibition with the cold and uninteresting effect of this collection of chemical transcripts from the forms of nature. On the other hand, the realistic fidelity of photography constantly reminds us of little facts that are missed by the painter. In one of the series of yachting scenes, for instance, the mainsail of a yacht, evidently in a light breeze, is rippled over by a multitude of little crinkles and folds. We never saw a yacht's sail painted in that way. The realistic power of modern photography is well exhibited in Lieut. Hawker's six successive views of the effect of a gun-cotton explosion under water, taken at intervals of three-fourths of a second with his automatically-charging camera. The proportion of attempts at picture-making in photography, by means of carefully-studied lighting and grouping, is not large, nor are any of them remarkable as compared with what Mrs. Cameron used to produce in that way. Architecture, to the representation of which photography lends itself so admirably, is very little represented, probably because there is so little demand for such subjects on the part of the general public. The "School of Military Engineering" shows some good photographs of Tintern Abbey and other Mediæval buildings, and Mr. W. J. Stillman has a medal for a view of the Erechtheum. The portraits by Mr. Mendelssohn and Messrs. Marius & Vivash are very good; the former especially aims at artistic effect, but he can do better than anything that we see here, when he has a thoroughly good subject. Among the minute revelations of photography is a remarkable example in the extraordinary and complicated object which turns out to be the microscopic representation of the tongue of a blow-fly.

THE exhibition of sketches and studies at the Dudley Gallery comes more strictly under that denomination than is usually the case in such exhibitions. In proportion to the number of works it contains a good many interesting and pleasant studies, varied by occasional not uninteresting eccentricities of medium or method. Thus Mr. Walter Severn exhibits, in a white frame, a beach study at Freshwater "sketched with sea-water"; so it is noted in the cata-

logue, though we do not recognise any special effect resulting from the saline medium. Mr. Couldery has been working in pastel, in which method his cats are as feline as in oil or water colour. Among the water-colour drawings may be picked out "Broken Weather, Bourne End" (142), by Mr. de Breanski, a fine broad sketch full of wind and wet; "The Golden Temple of Amritsir" (110), by Mr. Goff, a rather unusual architectural scene; "Vignettes" and "Studies" (30 and 38), by Mr. C. Robertson, executed in body colour with very minute finish; "The Roman Forum" (79), by Mr. Mildmay; "On the Roman Campagna" (170), a portion of an ancient aqueduct, by Mr. J. M. Donne; "The Humber at Hull" and "Oldbury-on-Severn" (32 and 39), by Mr. Medlycott; besides others.

WE understand that Dr. Rowand Anderson has revised and adjusted his design for the Buccleuch Memorial in Edinburgh, and different portions of the sculpture have been allocated to several artists. The monument, which is Tudor-Gothic in style, after the manner of Henry VII.'s Chapel, is hexagonal in form, and divided into four stages. The first stage or base is richly moulded, and has buttresses at the angles, above which are bucks bearing heraldic shields. The next stage contains a series of six oblong bas-reliefs in bronze, having moulded frames on three sides, and projecting canopied work on the upper side. The execution of these reliefs has been entrusted to Mr. Clark Stanton, R.S.A. At the angles of the next stage are short twisted columns supporting statuettes under canopies. The statuettes are to be executed by Mr. Rynd, sculptor; and to Mr. Burnet has been allocated six upright bas-reliefs, which occupy the surface of this stage. The canopies over these uprights are more elaborate than those on the first stage. The upper stage is elaborately decorated with foliated enrichments, and a small representation of a hunting scene will be introduced. This portion of the work is to be modelled by the Messrs. Stevenson. The monument, exclusive of the statue of the Duke (which has been executed by Mr. Boehm, R.A.), will reach a height of about 20 ft. The site fixed upon is the small square to the west of St. Giles's Cathedral.

THE Town Council of Edinburgh have directed Mr. Moreham, City Architect, to prepare plans and procure estimates for public baths to be erected on part of the ground which was occupied by the old Infirmary. The value of the site is estimated at 2,380*l*., and the probable expenditure upon the building 8,700*l*. The Town Council have also under consideration suggestions for the erection of a monument in St. Giles's Cathedral to the late Dr. Chambers, who restored that edifice. Amongst other contemplated improvements in the city are additions of a porch, &c., to the Catholic pro-cathedral in Broughton-street; the completion of the Waverley Hotel, Princes-street; and a new branch police station for the Causewayside district.

THE photographs which Mr. John L. Robinson, of Dublin, took on the recent excursion of the Architectural Association, and which are now on view at the Architectural Museum, Tufton-street, Westminster, will be of interest to more than the thirty individuals who went on that pleasant expedition. Mr. Robinson, being himself an architect, chooses his points of view with more judgment than the ordinary photographer could be expected to display; while the facilities afforded by the excursion enable him to obtain subjects which the professional photographer would neither know of nor care for, but which are of value to the architectural student. It must not be supposed that the whole series of something like twelve dozen plates are picked examples of the photographer's skill: the conditions under which they were taken would prevent that. But many of them are excellent specimens, and present such a charming play of light and shade, such indications of intelligent seizing of opportunities, as to give them a very distinctive character. Of course, colour cannot be even hinted at by photography, but form, tone, and texture can, and as examples of these the charming series of views from Compton Winyates should be specially noticed. No more piquant specimen of Tudor brickwork exists in England than this home of the Comptons. Some of the interior views, owing to the want of light, are less successful as pictures, although interesting as examples of architecture. But the whole collection must be judged, not as photographs, but as reminiscences of architectural features, selected by an architect of keen perception and catholic taste.

LORD BRABAZON, in asking, through the *Times*, for further assistance for the Metropolitan Public Gardens Association, states that the Association has, during the past year, added to the open space already at the disposal of the public three playgrounds and eleven gardens, comprising a total of about fourteen acres, at a cost of about 3,000*l*. They have fitted up 300 seats as resting-places for the aged and weary, assisted in the formation of many gardens and playgrounds, and fitted up a public gymnasium and obtained grants for others. Among the schemes on hand are the laying out of the churchyards of St. Dunstan, Stepney (six acres), St. Anne's, Limehouse (four acres), and that of St. Paul's, Shadwell, a much smaller space, and of a public playground at Whitechapel. The Association is untiring in its work, but wants funds; and we hope those who are able will support an association which is doing such a real benefit to the people.

THE subject of the influence of religion and art on each other occupied a good deal of attention at the Tuesday sitting of the Church Congress at Portsmouth. Mr. Sedding read a paper, very eloquent in parts, the main point of which was the plea for the introduction of good modern art into churches, not mock Mediævalism. In this we are entirely with him, though we can hardly admit that Hunt's "Light of the World" is of more interest to the modern Christian than the Ansidei Madonna. If he had said "to the uneducated modern Christian" we could have concurred. Mr. Horsley, R.A., read a strong paper against the use of naked models in art, a subject on which he is somewhat *tête montée*. There is certainly something to be said on both sides. There appears to have been a greater freedom arising lately in regard to the drawing from nude models by female students, and probably Mr. Horsley is right in intimating that some female students are going into this quite unnecessarily, for any artistic use they will ever be able to make of it. We heard of one case where a self-constituted class of female art-students endeavoured to engage a well-known male model, and the man, with apparently more sense of decorum than the women, refused the engagement. A great deal depends on the question of the spirit and reality of the work that is to be done. Speaking to an audience of clergymen, mostly quite ignorant of the conditions of artistic work, Mr. Horsley, of course, had it all his own way. Probably none of these reverend gentlemen are aware what is the mental strain of painting from the nude model, with artists who really mean business; it is hard work, in which none succeed but those who are in earnest. Nor, probably, was the clergyman who proposed to "boycott" all works of art produced with this kind of assistance (all nude works, he apparently meant) in the least aware that every sculptor, in setting about even a completely clothed figure, models the naked figure first, and could make nothing good of it otherwise. We believe there is some reform and restriction desirable in regard to the indiscriminate use of naked models, but the system does not necessarily imply degradation,—that is only the view of small-minded people who cannot see through conventionalities; and Mr. Horsley's theory that the best art can be produced without it is not happily illustrated by his own paintings.

A FAREWELL TO GREY FRIARS.

Here Lyes
A Benefactor.
Let no one
Move his Bones.

So runs the inscription of a mural tablet in the sole existing cloister of Grey Friars, Newgate-street. When read in conjunction with a lately-published scheme of the Charity Commissioners, this admonition has a more than ordinary significance. For after one or two previous movements to the like end, that body have decided upon a measure which but few citizens will regard with indifference,—the removal of the time-honoured Bluecoat School to "within a convenient distance from the City of London." From one point of view, so radical a change may be appositely compared with certain events which happened on this very ground just 350 years ago. At that crisis in the ecclesiastical fortunes of England, the Defender of the Faith found nowhere so rich a spoil as in his own capital. One Cistercian abbey, viz., Edward III.'s East Minster of St. Mary de Grace, West Minster itself, the St. Clare nunnery of Blanche, Queen of Navarre,* the Dominicans Mendicant at Blackfriars, Childe's Cluniacs of Bermondsey, Queen Matilda's Holy Trinity at Aldgate, the nuns Minchin of St. Helen's, Humphrey Bohun's Augustinians, the Carmelites at Whitefriars, De Manny's Carthusians at West Smithfield, together with other large and wealthy priories,—the outgrowth of centuries of covetousness and liberality,—all fell at once, and undefended, before that new sacrifice of Suppression.

Foremost among these religious houses ranked the monastery of Grey Friars, whose inmates followed the ascetic rule of St. Francis d'Assis. This had long enjoyed a signal share of public as well as of royal favour. The citizens at first strove in emulation to befriend a certain body of monks who had settled in their district. King Henry III. had not long ascended the throne when a party of nine Franciscans reached our shores at Dover. Five of them stayed at Canterbury: four, coming to London, found hospitable entertainment with the Black or Preaching Friars in High Holborn. After a brief sojourn in the house of John Travers, then sheriff (1224), on Cornhill, where their community and adherents greatly increased in numbers and importance, they obtained a permanent abode in St. Nicholas Shambles, Farringdon Within, through the munificence of John Iwyn, or Ewin, citizen and mercer. The deed bears the date 9 Henry III. William Joynier (mayor in 1239) builds for them a chapel, latterly the church choir; a nave is added by Henry le Waliys,—six times mayor during the period 1273–1298. These were supplemented with the chapter-house of Walter le Poter, sheriff in 1269 and 1272; the dormitory of Gregory de Rokeslé, mayor (1274–1280); the refectory of Bartholomew de Castro; Peter de Helyland's infirmary; and so on. William, King Henry III.'s tailor, provided a watercourse, which, springing from near to Bagnigge Wells, ran beneath Leather-lane, Holborn, and Newgate. In 1301, however, these yield place to a more magnificent structure, which was begun at the charges of Margaret of France, second wife to Edward I., who gave 2,000 marks for the choir; Gilbert de Clare, earl of Gloucester; and John de Bretagne, earl of Richmond, who, together with his niece, Mary, countess of Pembroke, contributed the new nave. The consorts of the two sovereigns next in succession resumed the pious work: other less exalted benefactors followed, including Sir Richard Whittington, who built the library, furnishing it with costly books.† Scarcely any trustworthy particulars come down to us as to the outward aspect of the new church, which was dedicated to St. Francis in 1327. The actual site we shall presently describe, and will merely state that the church was 300 ft. long by 89 ft. wide, with a height of 63 ft. from its marble floor to the roof. Particular sanctity was deemed to vest in interment within the precincts of Friars Mendicant. This accounts for the fact, insisted upon by Weever, of the unusual number of illustrious personages

* Introduced into England at the end of the thirteenth century. Their foundress, St. Clair, was a Franciscan nun, and a contemporary fellow-townswoman of St. Francis at Assisi. He was born there in 1182.

† It is on record that for the transcript of one set alone, De Lira's works in two volumes, 100 marks were paid.

buried here. They comprise four queens,* four duchesses, two of them being Beatrice de Bretagne, daughter to Henry III., and Eleanor, duchess of Buckingham; one duke, John of Bourbon, who, taken prisoner at Agincourt, died a captive in the Grey Friars; four countesses; two earls; eight barons, &c.,—in all 663 persons of quality. All the monuments were destroyed and sold in 1545 to the Lord Mayor, Sir Martin Bowes, for 50*l*.

It is conceivable that, in course of time, the citizens did not, in a general way, much concern themselves at the downfall of the monks and canons. But they felt a pecuniary interest in the sudden conveyance of many eleemosynary endowments from the sick and the poor. We thus find them after the Dissolution petitioning the sovereign for the restitution of the St. Mary's, St. Bartholomew's, and St. Thomas's Spitals, together with "the newe Abbey [St. Mary de Grace] at Tower hyll . . . . . onely for the relyeff, comforte, and ayde of the poore and indygent peple not beyng hable to helpe theymselffs."† They recovered St. Bartholomew's in 1544; the next year they secured Simon Fitz-Mary's Hospital,—site of Liverpool-street railway station,—for lunatics, the modern Bethlehem. On the 3rd of January, 1546, Bishop Ridley announced from St. Paul's Cross that, by indenture dated December 27th, 1545, the king had made gift to the mayor, commonalty, and citizens, of all the priory buildings, to be known as "Christ Church within Newgate, founded by Henry VIII.," together with the adjoining Bartholomew's Hospital, and the parish churches of St. Ouen, Newgate Market, and St. Nicholas. These two parishes and such part of St. Sepulchre's as lay within Newgate, were to form the new parish of Christ Church. "A very odd foundation," observes Stevens, "to let two churches of four stand, subverting the other two, and a good hospital, and to call himself a founder." The poor do not seem, however, to have derived much benefit from the change. It was King Edward VI., moved, we are told, by Ridley's exhortation upon the exercise of charity (1552), who shortly before his death established the three royal hospitals of Christ, St. Thomas, and Bridewell respectively, for the young, the sick, and the necessitous or thriftless poor. All of Christ Church, the library excepted, was consumed by the Great Fire. The existing structure was built by Wren, 1703–4, at a cost of nearly 12,000*l*. Like to the parallel instance at St. Bartholomew's the Great, West Smithfield, a modern grave-yard, to the west, at Christ Church, distinguishes the site of the nave of old Greyfriars. Sir Robert Clayton's Wing (1682), along the southern cloister, and Sir John Moore's writing-school, beyond the northern cloister (1694), are Wren's work also. Between "the ditch" playground and St. Bartholomew's Hospital is the Grammar School, built in 1795, mainly with Sir John Smith's bequest. An open cloister, the northern, occupies the position of Whittington's Library; a dormitory replaces the old Hall, which was supported by the western cloister (1836). On Restoration-day, 1829, was opened John Shaw's new Hall; the Tudor dormitories and wards were designed by his son.

A faithful copy-plan lies before us dated 1540. Grey Friars Churchyard is marked thereon as without the City Wall and Ditch, being situated westwards of "The Walke" leading through a gateway in the London Wall to St. Bartholomew's. Beyond is another burial-ground for the poor of that hospital.‡ The gateway in the Wall,—and its representative still exists,—stands by the north-western angle of Great Cloister, westwards of which latter (and within the Wall) is Little Cloister. It is over Little Cloister that we see the boys at play as we pass the railings in Newgate-street. Great Cloister is the modern court-yard between the dormitories. Southwards is Greyfriars Church, its eastern end abutting against Fowle or Chicken Lane.§ The plan gives a bird's-eye view of the church. It is of the type customary with Friaries; no chapels break the simplicity of the nave and choir, whilst the plain outline shows in striking contrast with the more varied configuration of abbatial and cathedral churches. Between the end of Fowle-lane in Newgate-street and Warwick-lane are indicated the Shambles with the meat and flesh markets. The slaughter-houses used to be in Warwick-lane. Did we continue the Wall westwards from its existing remains in St. Botolph's-Without Churchyard, along the southern side of the detached Christ Church burial-ground in King Edward-street, and then on to the bastion which stood at the return towards Newgate, we should pass between the School Infirmary (1822) and the rear of the Hall. The Hall, in fact, stands over the former refectory and against London Wall. The ditch beyond is commemorated by the name of the playground we have already mentioned as facing the Mathematical and Grammar Schools. The opening here, facing Christ Church burial-ground, was made on the removal of the Rose and Crown Tavern with other tenements within the gates. Mr. Legg, Architect to the Governors, informs the writer that the southern wall of his offices beneath the Latin School in the Clayton wing is built over a thick wall of chalk, flint, and rag; this, doubtlessly, is a relic of the former nave. What was left of the western Great Cloister was removed (1827), together with the earlier hall erected after the Fire, by Sir John Frederick, who was mayor in the year 1661. No remains of Grey Friars are now visible other than the pointed arches, shamefully disfigured by later modern filling-in of brick, and the buttresses of the southern Great Cloister. Here should be noticed the lower level of the pavement, now resonant during play-hours with whipping-tops and thongs of the genuine eel-skin.

With no income from original endowment, the property has increased to a princely amount by the gifts of subsequent benefactors and the contributions of governors' donations. The present net value of the educational endowment,—there are other charities besides,—exceeds 56,000*l*. The Metropolitan property comprises about 1,000 houses and holdings in various parts of the City, in Westminster, Southwark, St. James's Park (western side), Old Ford, Holloway, and Deptford. The country estates lie in the counties of Middlesex, Essex, Kent, Buckingham, Oxford, Surrey, Sussex, Hereford, Bedford, Cambridge, Hertford, Lincoln, Norfolk, Northampton, and Berkshire. There are, besides, certain urban possessions at Reading, Ware, Romford, Brockley, Epsom, Hornsey, Rochester, and Erith. The Hertford schools for girls and the little boys stand on seven acres, in all, of land. The London premises cover 1a. 2r. 20p. out of 4a. 3r. 20p.; this latter site being estimated at a value of, say, 700,000*l*.

The primary object of King Edward VI.'s foundation was to provide orphans and otherwise destitute children with a home. Let it not be urged to the boys' reproach that in each corner of Great Cloister once stood a statue of a Blue Coat scholar thus inscribed:—"This is Christ's Hospital where poor Blue Coat boys are harboured and educated." They have relinquished their "yellows" or sleeveless under tunics, and their muffin caps, but in other respects retain the dress, being that both in colour and fashion peculiar to the inferior classes, which they exchanged for their "russet cotton," * in Queen Mary's reign. Stow described their appearance, thus clad for the first time, in Easter-tide, 1553, at the Spital sermon, Spital-fields. On their buttons is the effigy of their founder. Though they have long ceased to make periodical excursions to bathe in Peerless-pool, we shall miss their familiar appearance in our streets, sometimes in groups under charge of a Royal Artillery sergeant. We shall miss too the Lenten "Suppings," the processions to the Mansion House, and the Spital sermons in Christ Church at Easter-tide; and, it may be, the annual presentation of the forty "Royal Mathematical Boys," with their drawings, to the sovereign. They cannot boast of the more aristocratic associations which cluster around the past *alumni* of Charterhouse or St. Paul's, which have already set the example of migration from Town. But that school has little to be ashamed of whose inner life is portrayed by the facile pens of Leigh Hunt, Coleridge, and Charles Lamb, which has given to the world such scholars as Joshua Barnes, a Grecian of Grecians, Markland, Campian, and Mitchell; to the Church men like to Stillingfleet and Middleton; which can claim as its own Thomas Barnes, prince of editors, Scholefield, Hartwell Horne, and Thomas Dale; the authors of "Britannia" and "Clarissa"; and a hero like Louis Cavagnari, beneath whose bust at Christ's is fittingly written the *Dulce et decorum* he won at Cabul.

* Margaret of France; Isabella, wife to Edward II., and his daughter Joan of the Tower, Queen of Scots; and Isabella *suo jure* Queen of Man. Here, too, were deposited the hearts of Queen Eleanor, wife to Henry III., and of King Edward II.; with the body of Isabella, daughter of Edward III., and wife of Ingelram de Courcy, earl of Bedford.

† *Vide* certain memoranda relative to the Royal Hospitals,—Court of Common Council, 1836.

‡ The thoroughfare from Newgate-street to St. Bartholomew's, along "The Walke," was closed seventy years ago.

§ Since Butcher Hall-lane, now King Edward-street.

* On St. George's Day, 1502, the Grey Friars abandoned their London russet for their original dress, in undyed white-grey.

COMPETITIONS.

New Church, Grove Park, Lee.—In the recent competition for this building, the design of Mr. Charles Bell, of Dashwood House, E.C., was selected, and the work will be proceeded with at once. There were twenty competitors.

Undercliffe Drive, Bournemouth. — At the meeting of the Bournemouth Improvement Commissioners on Tuesday last, the Report of Sir Joseph Bazalgette on the twenty-nine sets of plans sent in in this competition was read. The following is an extract from Sir Joseph's report:—

"Out of the twenty-nine schemes submitted, sixteen propose the formation of roadways not exceeding 10 ft. above mean sea level, and of these nine propose the formation of roadways and footways, the united widths of which do not exceed 40 ft., and seven of them not exceeding 50 ft. It is from the plans whose general outlines come within these limits that the approved designs should be selected, having reference also to their provisions and appliances as being best suited to the locality.

But the selection must not be assumed to embrace the approval of all the details of any plan.

The design under the title of 'Utile Dulci' provides a carriage-way 30 ft. wide with a 10 ft. footway raised 10 ft. above mean sea level. Flights of steps, extending along an aggregate sea frontage of from 8,000 ft. to 9,000 ft., give access from the footway to the sands. These are broken by twelve inclines for boats and bathing machines, each 200 ft. wide, viz., seven on the east side of the pier and five on the west side, in addition to one opposite Durley Chine, 120 ft. long; also by seventeen projections for sheltered seats, each 40 ft. in length. The steps would be largely used as seats by nurses and children in fine weather. This design, taken as a whole, deserves first prize, although it would not be well to carry the roadway under the pier as suggested.

Next to it should be classed the design 'Ad Rem,' which proposes also a 30 ft. road and a 10 ft. esplanade raised 9 ft. 6 in. above mean sea level. It provides four lengths of inclines, in convenient places, for boats and bathing-machines, giving an aggregate length of frontage to the sands of 2,210 ft., and twenty-eight flights of steps, each of about 90 ft. length of frontage, or a total of 2,520 ft.; and the line of wall is broken by thirteen projections with sheltered seats and steps to the sands.

The third place should be awarded to 'Fidelitas Vincit,' which provides a roadway 31 ft. wide and a footway of 12 ft.; but raised only 8 ft. above mean sea level. The line of sea-wall has twenty-seven flights of steps, each giving 150 ft. of frontage to the sands, or a total length of 4,050 ft., but each 300 ft. of wall is broken by circular projections for seats. The approaches to the pier are well arranged."

Sir Joseph Bazalgette mentions that the estimates for the drive and cliff works in the three selected designs range from 28,525*l*. to 35,142*l*., "but as the authors have variously estimated the value of the work to be done, they do not bear comparision." The committee of the whole Board appointed to consider the matter recommended that Sir Joseph's advice in the above Report be followed, and that the three premiums of 200, 100, and 50 guineas for the three most suitable plans be awarded to the authors of the designs respectively marked "Utile Dulci," "Ad Rem," and "Fidelitas Vincit." The recommendation of the committee was unanimously agreed to. It was decided that an exhibition of the whole of the plans take place at Messrs. Rebbecks's Mart, on Wednesday, Thursday, and Friday next week. The three successful plans were opened, and it was found that the authors were:—(1) Mr. John Stewart, (of Hackney), Littledown-road, Bournemouth, a visitor; (2) Mr. T. J. Scoones, Unity-street, College-green, Bristol, who has designed a similar work at Weston-super-Mare; and (3) Messrs. Rowell & Harding, Wimbledon.

New Church, Borrowstonness.—Messrs. Shiells & Thomson, of Edinburgh are the successful competitors for the new parish church at Borrowstonness, which is to be erected at a cost of between 4,000*l*. and 5,000*l*.

New Residential Flats in Westminster. An extensive block of residential flats is about to be erected immediately in Carlisle-place, Victoria-street, Westminster. The frontage will be 388 ft., and the elevation six stories in height, faced with red bricks with stone dressings. The block will be divided into nine tenements on each floor, each pair of tenements being approached by a stone staircase, with a hydraulic passenger-lift in the well of stairs, communicating with the landing on each floor. The suite of rooms will be self-contained, and varying in accommodation from eight rooms up to fourteen. All the floors will be fireproof.

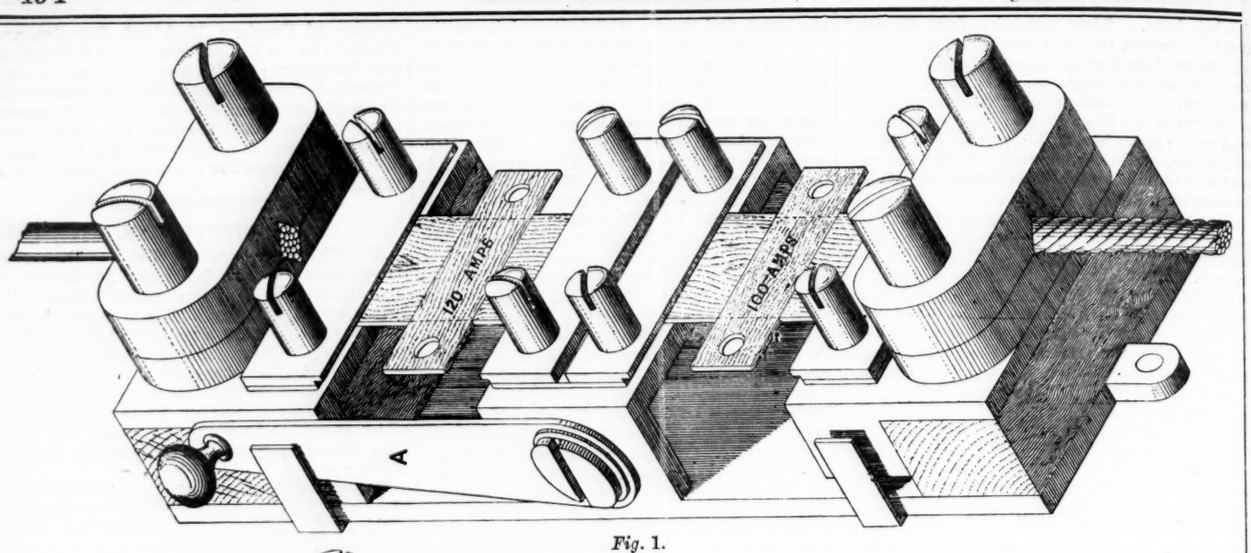


Fig. 1.

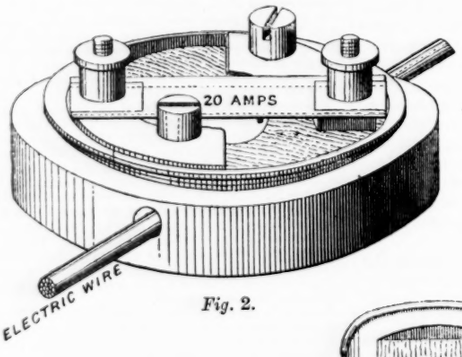


Fig. 2.

Fig. 3.

Fig. 5.

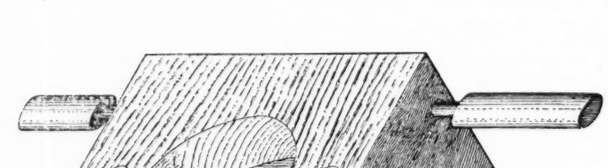


Fig. 4.

INVENTIONS EXHIBITION.

The Globe Electrical and Engineering Company have an almost complete display of Mr. Killingworth Hedges's patents in electrical appliances. It comprises, amongst other fittings, Mr. Hedges's switches and contact-breakers, which, in electrical parlance, take the place of gas-taps and unions. These instruments made their first appearance at the Exhibition in Paris of 1881. The movable rubbing surface is of bent copper, which gives a very large bearing, and is easily replaced when worn. Switches of all sizes, on this principle, are constructed at the Globe Company's Works, and are exhibited to carry currents suitable for 300 lights.

A new ornamental type of small contact-breaker for group or single glow lamps has lately been introduced for use in houses, the case being made to harmonise with the decoration. In this pattern, when the current is passing, the contact arm is well kept up to its work by means of a wiping spring engaging on the short end of the arm, which plan prevents any chance of the switch being left turned partly on and dangerously heating.

The above company also exhibit a most complete collection of Hedges's cut-outs, referred to specially in the discussion which followed Mr. Hedges's paper on "Precautions to adopt on introducing the Electric Light into Houses," read before the members of the Royal Institute of British Architects on February 18th, 1884. Some of these instruments are shown with an arrangement which enables resistance to be put into the circuit automatically on the melting of the fuse. At first sight this may seem a blundering policy, as the primary object of a cut-out is to act as a safety-valve and protect against any excess current. In practice, however, the sensitive fuses, such as are indispensable for complete safety, are often melted by the wrong circuit being switched on by a careless attendant. In the event of such an accident with the new automatic duplex cut-outs, the lights would not go out as under the old system, as the excess current would be broken by the resistance, and nothing but a dangerous short-circuit would melt the remaining fuse and extinguish the lights. The cut-outs remain of the same design as were shown at the Philadelphia Exhibition, where they were employed in protecting the electric light wires. Fig. 1 is a duplex form, which enables a spare fuse to be instantly substituted for that melted, by turning the handle marked A. For instance, as shown, the working fuse is set to carry the current for 100 lights and melt with any excess current, and the spare one marked 120 would be thrown into action by causing A to bridge the gap. Fig. 2 is a cut-out designed for smaller currents, and is the kind generally used in private houses; the mica foil is shown by fig. 3, the fusible portion being shaded. Fig. 4 is a connector form of cut-out, and is constructed of an alloy which adheres to the mica when melted, and does not run into globules which may cause fire. It is so arranged that the branch main can be united to the small lamp wire without cutting the former, and, at the same time, produce a very simple form of fusible connexion. Fig. 5 can be inserted, and easily replaced if melted, by any person, without special electrical knowledge. This pattern is used throughout the Law Courts, and for the protection of the electric light wires in the South Kensington Museum and Buckingham Palace. Considerable alteration has taken place in the fuses, which have been somewhat improved and strengthened at the ends where the contact takes place, making them much easier to fix than the dangerous lead wire fuses.

A novel arrangement in automatic cut-outs may also be seen at the Globe Company's stand. It consists of a lever, to which a weight is attached, the lever being held up in place by a small notch in a steel bar, which, when the current exceeds a given amount, is attracted by the action of an electro-magnet placed in a shunt circuit, releasing at the same time the weighted lever, thus opening the circuit immediately the current exceeds the amount the instrument is regulated to carry.

The Globe Company show a variety of electrical accessories and fittings, such as would be required for house lighting, also a novel speed indicator for insuring the steady running of the dynamo, which can also be applied for registering the speeds of all fast-running machinery.

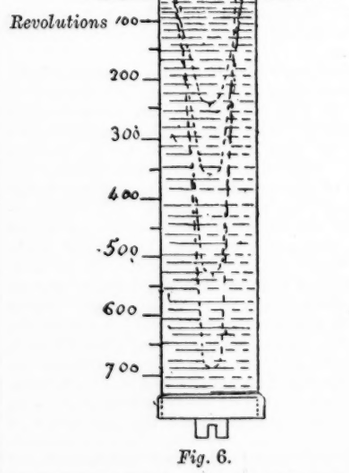


Fig. 6.

It is known as the vortex speed gauge, and is merely a movable glass tube which is rotated in a metallic case, on the outside of which is fitted a sliding ring. The glass tube being partially filled with fluid, when revolved the liquid has a tendency to force its way up the sides of the glass and carry the air down the middle in a parabolic form, which lengthens or elongates

according to the speed. The action is shown by the accompanying diagram (fig. 6). The bottom of the bubble registers the speed, which it is easy to determine by getting the wires of the sliding-ring in a line, the revolutions being engraved on the side of the case. The angular velocity of the fluid which causes the depression for any given speed can be calculated; and as the depression is always in proportion to the speed, so the calibration of this instrument is much simpler than other designs of speed indicators, in which the ordinates vary with the increase of speed.

Several of these gauges are working in the engine-room at the Exhibition.

THE CHURCH CONGRESS AT PORTSMOUTH.

The Ecclesiastical Art Exhibition in connexion with the Church Congress is well worth a visit. The Assembly-rooms at Cawte's Hotel, close to Southsea Pier, have been arranged for its reception, and afford a fairly satisfactory suite of Exhibition "galleries." The exhibits are divided into two classes: modern church furniture, decoration, &c.; and an excellent loan collection of miscellaneous items of ancient ecclesiastical art. We shall first briefly note some of the most striking objects shown in the former class.

Messrs. Bemrose & Sons, of Derby, occupy a large stall at the entrance. Besides a quantity of Congress literature, they show, among their publications, Mr. St. John Hope's "History of All Saints, Derby," and Ussher's "History of Croxall," not to mention Cox's well-known "Derbyshire Churches." These works are elaborately illustrated, and should be in every architectural reference library. This may perhaps prove a hint to the Library Committee at the Institute.

Mr. W. Baker, of Wigmore-street, shows among many other objects some excellent, specially-designed Buckinghamshire lace; and also various examples of embroidery. Of the latter may be named a dark-red chasuble with passion-flower work, the figure of our Lord at the back being represented as nailed to the passion-flowers. The treatment of the foliation appears, however, rather too naturalistic. We noticed also some altar-frontals, one of the best being a white cloth one, with conventionalised roses and lilies between dark velvet orphreys.

The Wimbledon Art College for Ladies would appear to undertake all kinds of decorative work,—painting, embroidery, stained glass, &c. The best example of the College work shown was an altar-frontal of white silk figured damask, embroidered with a powdering of conventional flowers in well-harmonised and brilliant colours.

The Æolus Waterspray Ventilating Company exhibit a complete series of their various apparatus for ventilating and warming churches, schools, &c., illustrated by good working models.

The East Grinstead Sisters are as usual to be commended upon their excellent work in embroidery. At the same time we would suggest that the human figure subjects are too archaic in character, and poor in drawing and conception. The fact is, also, that the very nature of needlework makes it unsuitable for this kind of representation. The Sisters exhibit some excellently-worked stoles, altar-frontals, &c.; and we also especially noticed a wall-hanging of some coarse dull green material, covered with an effective embroidery of brown stems, silvery leaves, and golden fruit.

Mr. E. Frampton, of Buckingham Palace-road, shows a stained-glass window intended for Stepney Church. We preferred, however, some small lights, by the same artist, representing St. Cecilia and St. Gregory. Messrs. Hammer & Co. have a large show of their well-known school fittings, and also exhibit some more elaborate items of church furniture, including an oak altar and lectern.

Messrs. Jones & Willis have a well-arranged stall, containing examples of all kinds of church furniture and decoration,—oak and brass work, embroidery, and silver communion vessels. Among the examples of embroidery may be named a dark red silk frontal, with flowers worked in dull golds, greens, and purples, as being quiet and satisfactory in effect.

Messrs. A. L. Moore & Co., of Southampton-row, furnish numerous cartoons, and also examples of their stained glass. We remarked a panel of Renaissance character, with arabesque ornament around the figure of a girl playing a lyre. A Mediæval panel, with armorial detail, was also noticeable, the heraldic drawing being, however, rather too forced and extravagant.

The Royal School of Art Needlework has a well-arranged display of some of the most noteworthy embroidery in the Exhibition. Against the wall hangs a very rich-looking quilt of white satin worked over with elaborate gold-foliated ornament, outlined with red. Below, a very original altar frontal attracts attention. The ground is white cloth, and figures of angels, including Raphael, Michael, and Gabriel upon it, are outlined only in dark browns, greens, and golds. The embroidery is partly in silk and partly in crewels. Along the super-frontal runs the inscription:—"Tibi Omnes Angeli incessabili Voce Clamant." The whole work is certainly striking, but savours rather too much of a cartoon in its effect. It was designed by Mr. Selwyn Image. Messrs. Wake & Dean, of London-road, exhibit useful improvements in seats and desks for schools, mission-halls, &c. The seats can be raised to a vertical position when required, and the desks are convertible to flat tables. There is an extensive collection of all kinds of church fittings manufactured by Messrs. Wippell & Co., of Exeter. Their display of hanging-lamps, coronæ, &c., for the lighting of country churches, is particularly noticeable.

The last exhibit we can find space to refer to, s the collection of chairs made by Messrs. West & Collier, of Hambleden. A large number of specimens are shown, suitable for domestic as well as ecclesiastical purposes. With the exception of the "Gothic" ones, the firm may be congratulated upon the character of their designs. Those known as numbers "92," "98," and "102," are really very good, and far preferable to the more elaborate "regulation" patterns of the "complete house furnishers."

Next week, we hope to give some description of the Ancient Art Section, accompanied by sketches made at the Exhibition.

CARRIAGEWAYS AND PAVING.

We extract the following from the annual report of Mr. James Lovegrove, Surveyor to the Board of Works for the Hackney District:—

"Macadamised roads are really very costly as compared with paving. Granite setts form the most economical paving, and next comes wood. In many frequented roads, if the cost of paving were spread over a period of twenty years, it would probably be 40 to 60 per cent. less than the cost of maintenance of a broken granite road.

In my report of 1867 it is stated that when the cost of maintaining granite roads reaches 10d. per yard super., paving should at once be laid down, but it must be also borne in mind that the above estimated cost per yard is the average of considerable lengths, some portion of the lengths being wide and some portions narrow; therefore the cost per yard in some parts of Kingsland-road surface would be 3s. per yard super., and other portions 1s., and so with the other roads. The maximum saving would, therefore, be obtained by paving the full widths of the narrowest portions of the roads herein named, rather than by selecting one or two complete lengths.

The roads, or parts of the roads referred to, have since been paved, but there are other roads in the district, as costly, and, indeed, some more costly than Kingsland-road to maintain with broken granite, and which are, nevertheless, very rarely in good order for a longer period than nine months:—

The following are a few examples:—

Lea Bridge-road.
Church-street, Stoke Newington.
Albion-road, Stoke Newington, south end.
West-street and Pritchard's-road.
Well-street and Water-lane.
Part of Morning-lane.
Margins of Stoke Newington-road.
Margins of Stamford Hill.
Margins of Upper and Lower Clapton.
Homerton High-street.
South portion of Clarence-road.
Dalston-lane (part).
Shacklewell-lane (part).
Amhurst-road (eastern portion).
Victoria Park-road (western portion).

On Broken Granite Tests.

On p. 5 of my last annual report are given the positions and lengths of four different kinds of granite, laid down under the same lines of traffic, with the view of making a comparative test as to quality.

It is difficult, however, to fix upon any considerable length which can be divided and each division subjected to exactly the same conditions.

1. There should be one common incline and cross section.
2. The line should be straight.
3. There should be no lateral or cross streets, nor any depôt, or wharf, or anything likely to interfere with the continuity of the traffic.
4. All parts should be equally exposed to the same atmospheric conditions, and be treated the same in respect of cleansing and watering.

The best and most durable road materials are not discoverable by watching the surface condition only of the road. The condition of the underside and the size of the materials should also be well examined. Thus I find in the case of Guernsey granite the under parts of the stone remain intact, presenting the sharp angles as when first laid down, and not much crushed under the steam roller, consequently less new material is required when it becomes necessary to pick up and regulate the road. In other granites, though differing but slightly in surface appearance, the stones are found to be crushed and cracked under the roller, and should therefore, if used, be rolled in with a roller of say not exceeding 10 tons weight.

It is also observable that with the 15-ton roller the other granites do not so readily become fixed as Guernsey, which has a character of toughness peculiarly its own, so that the wavelike form into which it is forced in front of the steam roller is of less height, and the process of abrasion under the roller is conducive to a fixed position. Further, this special quality of the Guernsey stone results in a saving of time in rolling,—and requires much less grit to help to bind it together, consequently a more compact road crust is formed, with less grit to work up as mud under the traffic.

These observations are based on careful examinations which have been made of the respective materials after they have been subjected to heavy vehicular traffic for several years. The trials of Rowley and Clee Hill stones, referred to on page 5 of my last Annual Report, are the first which have been made of these stones within the district.

Trials have been made in past years with blue Guernsey, Markfield, Belgian, and Quenast stones. Generally the machine-broken granite has been found not so reliable as the hand-broken. In the former there is a considerable admixture of stones of thin wedge-like form, which in the process of spreading will form small patches, less capable of resisting the traffic than the neighbouring stones. Taking all these considerations into account the cost price of the other granites ought to be much less than that of Guernsey in order to obtain equality in value."

OBITUARY.

Mr. William Dickinson.—On the 26th ultimo, after a few hours' illness of heart disease, died Mr. William Dickinson, of 176, Broomspring-lane, Sheffield, aged 59 years. Mr. Dickinson was up to the moment of his death the clerk of works of the new Montogomy Hall, now erecting in Surrey-street, Sheffield, from the designs of Mr. C. J. Innocent, F.R.I.B.A., architect, of George's-street, Sheffield. He was widely known and much respected, and as a clerk of works he had had a very large experience. For the last twenty years or so he had been almost entirely employed as clerk of works in Sheffield and its immediate neighbourhood. He was the head clerk of works to the Sheffield School Board for a number of years, and nearly a score of the Board Schools, erected by that body from the designs of Messrs. Innocent & Brown, architects, of Sheffield, were carried out under his direct supervision. He was born at Whitehaven, in Cumberland, and was by trade a joiner, but was a thoroughly practical man in the various branches of the building trade.

Mr. Robert Brindley.—With much regret we have to announce, after a short illness, the death on Oct. 1 of Mr. Robert Brindley, a name well known to stone-carvers. The deceased was brother of Mr. William Brindley, of the firm of Farmer & Brindley, in whose employ he had been over twenty-five years, having been foreman of many of their most important works. He was highly esteemed and respected by his fellow-workmen.

EXCURSION OF THE ARCHITECTURAL ASSOCIATION TO BISHAM ABBEY.

The last summer excursion of the Architectural Association was made last Saturday, the 3rd inst., to Bisham. The members, passing through Great Marlow paid a short visit to the old Deanery, which is now being restored by Mr. Carter, of Great Marlow. There are a few interesting features about the old house, the principal being the old hall, with an open-timbered roof, and two tracery windows of very coarse detail. On reaching Bisham, the first place visited was the Church of All Saints. Here the party was met by the Rev. T. E. Powell, vicar of Bisham, who gave a brief

Part of Deanery, Great Marlow.

description of the church. In the year 1848, when he first saw the church, the only remains of the original building were the tower and the north wall as far east as the chancel. There were no traces of either buttresses or windows in the wall. The church was restored in 1849, under the direction of Mr. Benjamin Ferrey.

The original tower, built of chalk, and plastered, contains little detail of architectural interest. The belfry windows show traces of zigzag ornament, and the plaster falling away at the angle shows the original angle-shaft. Internally, the tower arch is in a good state of preservation, and the chalk ashlar in the ringing-chamber is very good. The principal interest in the church centres in the Hoby Chapel, which contains an imposing monument, of alabaster,

Bisham Abbey.

to the memory of Lady Elizabeth Hoby, 1566. This has a canopy, supported by columns, and seven large figures. The general feeling of the detail is Italian. In the same chapel is another monument, also to a member of the Hoby family, consisting of an obelisk, with four swans at the base. At the end of the chapel is a large armorial window, the colours being enamelled on the glass.

The members then proceeded to Bisham Abbey. There is very little of the old abbey left, the principal features being the entrance porch, which has a richly-moulded arch and groined ceiling; a good geometrical tracery window, of very similar design to the clearstory windows at Westminster Abbey; and the large hall in the centre of the house. The present house dates from about 1590, and was built by Sir Edward Hoby.

The principal entrance is through the Early English doorway which leads into the large hall, which has an open oak roof. This hall has been so surrounded by the later buildings, that all the original windows, which were five in number, have been blocked up, and the hall is lighted from two windows in the apex of the gables. The old windows, which, up to a recent date, were covered with plaster, have been uncovered and the stone tracery exposed. In this hall is a fine carved wood and stone mantel-piece, which was brought from Worcester in 1843. This chimney-piece was originally given to the then Earl of Plymouth, by James I., the house from which it was taken now being used as part of the pottery works at Worcester. In one of the recesses, which was formerly a window, a fresco of the death of the fourth Earl of Salisbury, at the siege of Orleans, has been painted by Roddam Spencer, but it is decaying very fast.

The dining-room is entered from the hall, and is a fine panelled room, 54 ft. long. In this room are several historical pictures. "Van Tromp," by Sir Peter Lely; "General Monk," by Peter Bursler, &c. The most remarkable picture is that of Lady Elizabeth Hoby, painted after the death of her husband in 1566. She is represented dressed in coif weeds and wimple exactly as she is sculptured in the monument in the Hoby Chapel. This is called the ghost picture, because her ghost, dressed in the negative of this picture—that is, all the white, black, and black-white,—is said to haunt the bedroom (now used as a smoking-room), in consequence of a slight accident which happened to her son William, whom, because he could not write his copies without blots, she murdered. This legend must be true because the identical blotted copybook was found some years ago by the present owner stuffed beneath the joist of the floor.

Behind the tapestry of one of the bed-rooms a secret room was discovered, with a fireplace with the flue leading into the flue of the hall chimney, for the sake of concealing the smoke.

The drawing-room was the apartment used by Elizabeth when she was placed by Queen Mary under the charge of Sir Thomas Hoby, and the bay-window is said to have been added for her. The drawing-room has a plaster ceiling, but the roof over it has a fine Early Perpendicular oak roof, which was at one time open. This room has some of the old stained glass left, of which there must have been a great quantity at one time; as when the floor of the dining-room was repaired, some time ago, a large quantity of broken glass was found.

The walls of the house were originally built of brick and plastered, and the general tone of the building is a warm grey; the workmanship was originally very bad, and the wonder is how much of the work holds together, probably more from old association than anything else.

The old abbey must at one time have been a splendid building, as it is recorded the knights in armour rode into the church, and hung their shields on the columns, but all traces of the church have disappeared, though during the late dry summer traces of old foundations have been seen in the lawns round the building.

Illustrations.

DESIGN FOR STAINED GLASS BY MR. E. BURNE JONES, A.R.A.

THIS is one of the series of stained glass designs made by Mr. E. Burne Jones, A.R.A., of which we have published several, and shall have the pleasure of publishing several more. The window, executed by Messrs. W. Morris & Co., is at Biarritz. It may be noticed how the design, although approaching perhaps a little too much the character of pictorial treatment in the general composition, preserves a simplicity of line in the figures, the drapery, and the trees, eminently suitable for stained glass. The lithograph is reproduced from one of Mr. Hollyer's photographs from Mr. Burne Jones's cartoons.

HOUSE AND STUDIO FOR MR. J. MACWHIRTER, A.R.A.

The remodelling of this house, 1, Abbey-road, St. John's Wood, was carried out under rather peculiar circumstances, the architects' assistance being called in not to build a new house, but to unite and blend into one two separate and already existing houses; such features as the projecting bay-windows, projecting porch, tower, &c., being added to improve the plan in the first place, and to give character to the exterior. The surface of the brickwork over all the exterior was covered with Portland cement pebble casting, which, while preserving the brickwork, gives the outside surface a more agreeable texture than the ordinary smooth treatment. The studio window commands one of the finest lights in St. John's Wood. The work was carried out by Mr. E. Cox, builder, of St. John's Wood, from the designs and under the superintendence of the architects, Messrs. Wallace & Flockhart.

SKETCHES AT ROTHENBURG.

These bold little sketches of two old gateways of Rothenburg, by Mr. A. B. Pite, speak for themselves. They have an interest both as representations of picturesque old buildings, and, as examples of sketching, for the effective massing of light and shadow which they display.

MOSAIC PAVEMENTS AT BIGNOR.

For a description of these fine specimens of mosaic pavement, see the article on "The Roman Villa at Bignor," on p. 487 of this number of the *Builder*.

SHOPS, HIGH-ROAD, STREATHAM, S.W.

Our illustration shows part of a block of business premises, in the Flemish style, recently erected on the Bedford Park Estate, Streatham, S.W., from the designs of Messrs. Wheeler & Hollands, architects, of 27, Chancery-lane, E.C., and under whose superintendence the works have been carried out jointly by Mr. Mason and Messrs. Hayward & Morgan, builders, of Streatham.

Walthamstow.—The new Sunday Schools of St. Michael's and All Angels' Church, Walthamstow, were opened on Tuesday last by the Hon. Mrs. Courtenay Warner. The schools have been erected from the designs of Mr. J. M. Bignell, of Clapham. The contract was carried out by Mr. S. J. Scott, of 3, Blomfield-street, E.C., and Walthamstow.

"THE MARRIAGE IN C

DESIGNED FOR STAINED GLASS BY MR. E.

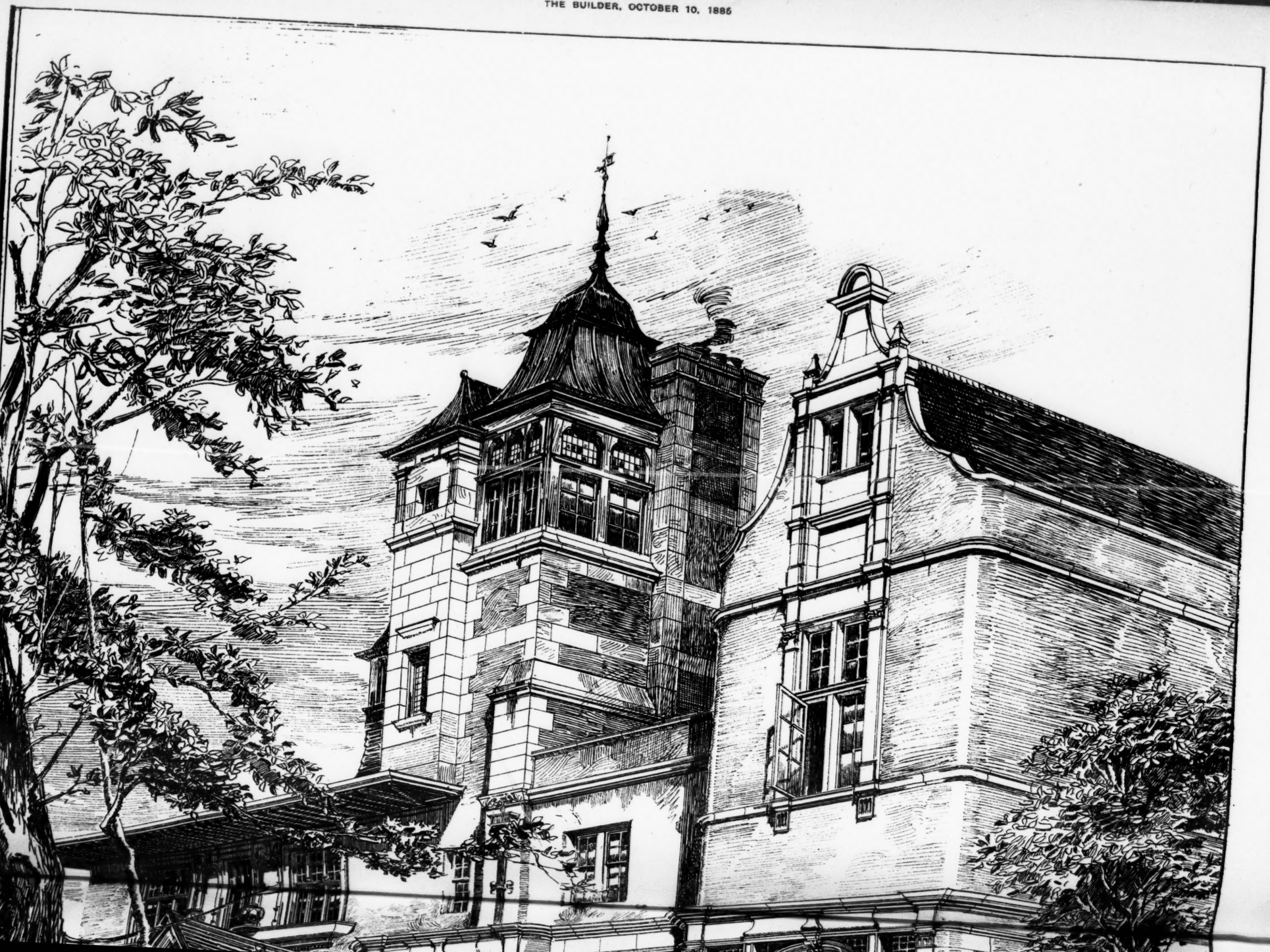
EXECUTED BY MESSRS. WM. MO

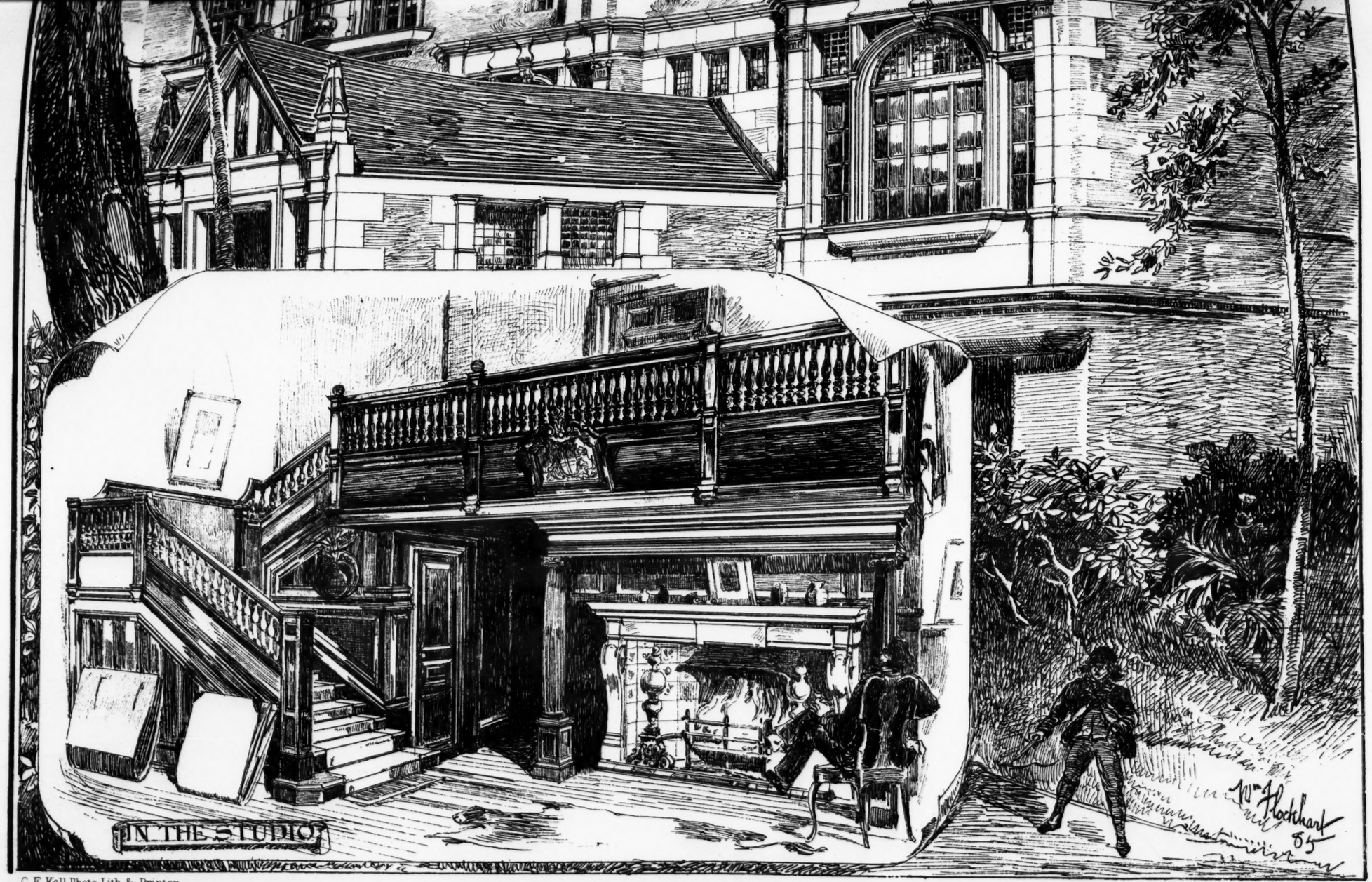
INK-PHOTO. SPRAGUE & Co. LONDON.

. IN CANA."

MR. E. BURNE-JONES, A.R.A.

M. MORRIS & Co.



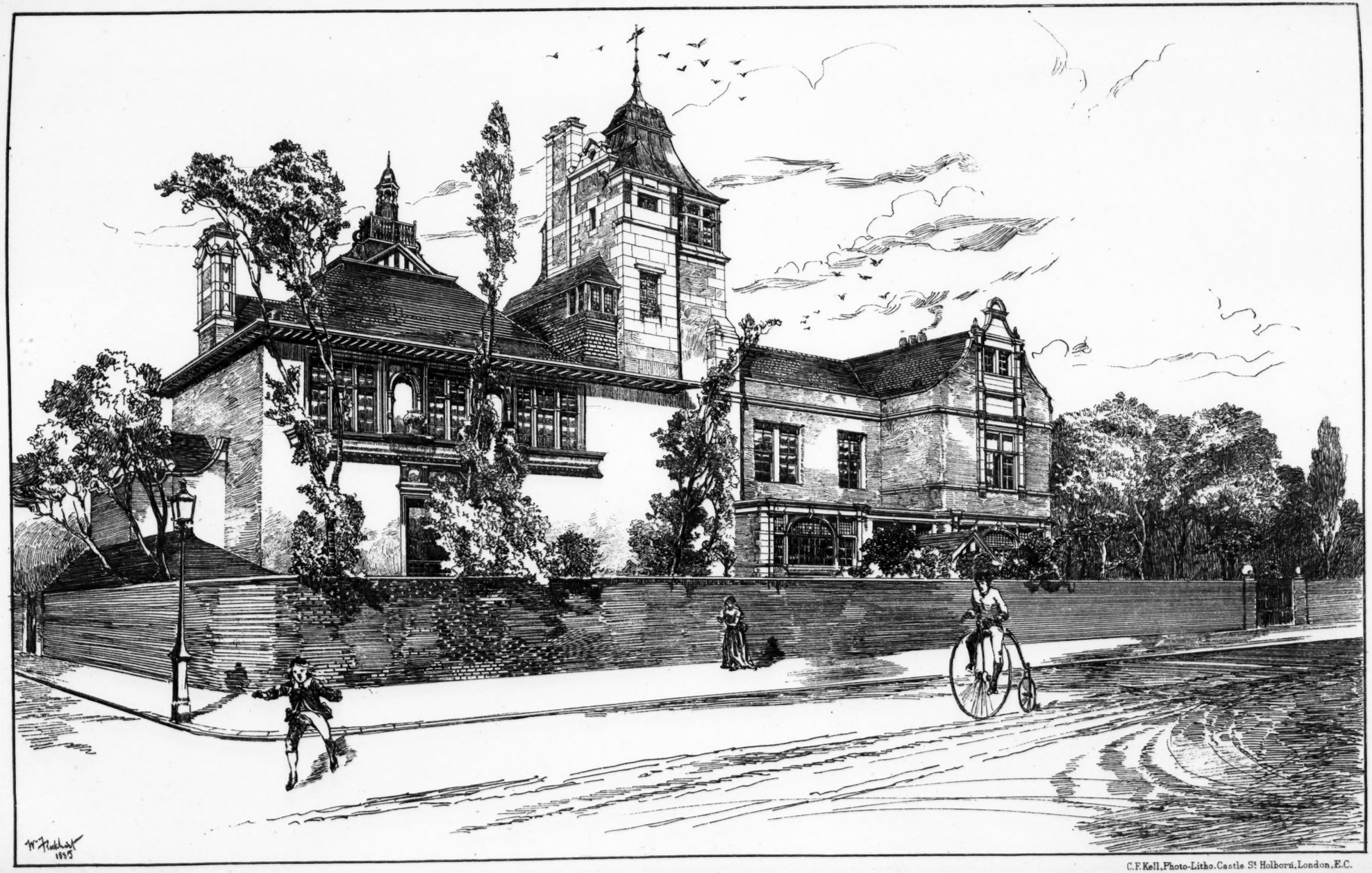


C. F. Kell Photo-Lith. & Printer. 8. Castle St. Holborn. London. E.C.

HOUSE AND STUDIO FOR J. MAC WHIRTER, ESQ., A.R.A. MESSRS. WALLACE AND FLOCKHART, ARCHITECTS.

SKETCHES AT ROTHENBURG A.D. TAUBER. BY MR. A. B. PITE.

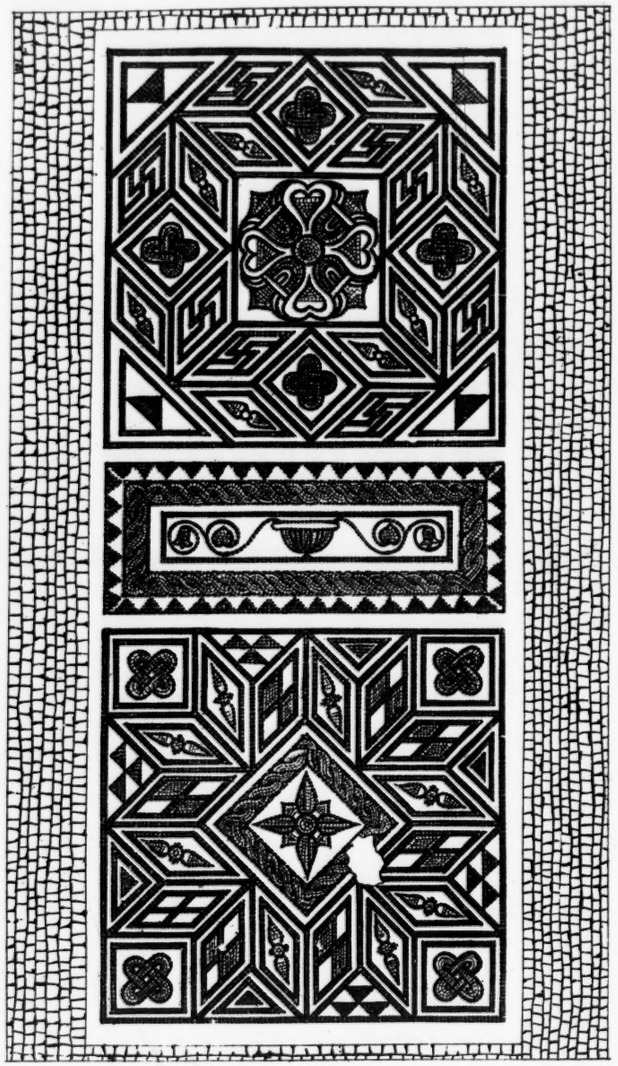
C.F.Kell, Photo-Litho. Castle St Holborn. London, E.C.



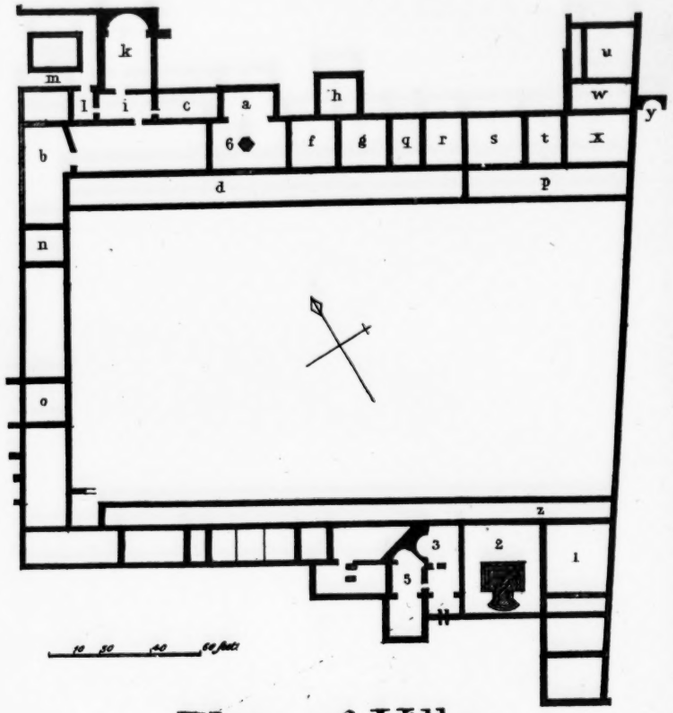
C.F.Kell, Photo-Litho. Castle St Holborn, London, E.C.

HOUSE AND STUDIO FOR J. MAC WHIRTER, Esq., A.R.A. Messrs. Wallace and Flockhart, Architects.

Pavement with head of "Winter"
Room b on plan



Pavement, Room c on plan



Plan of Villa.

Portions of Mosaic Flooring from Roman Villa at Bignor

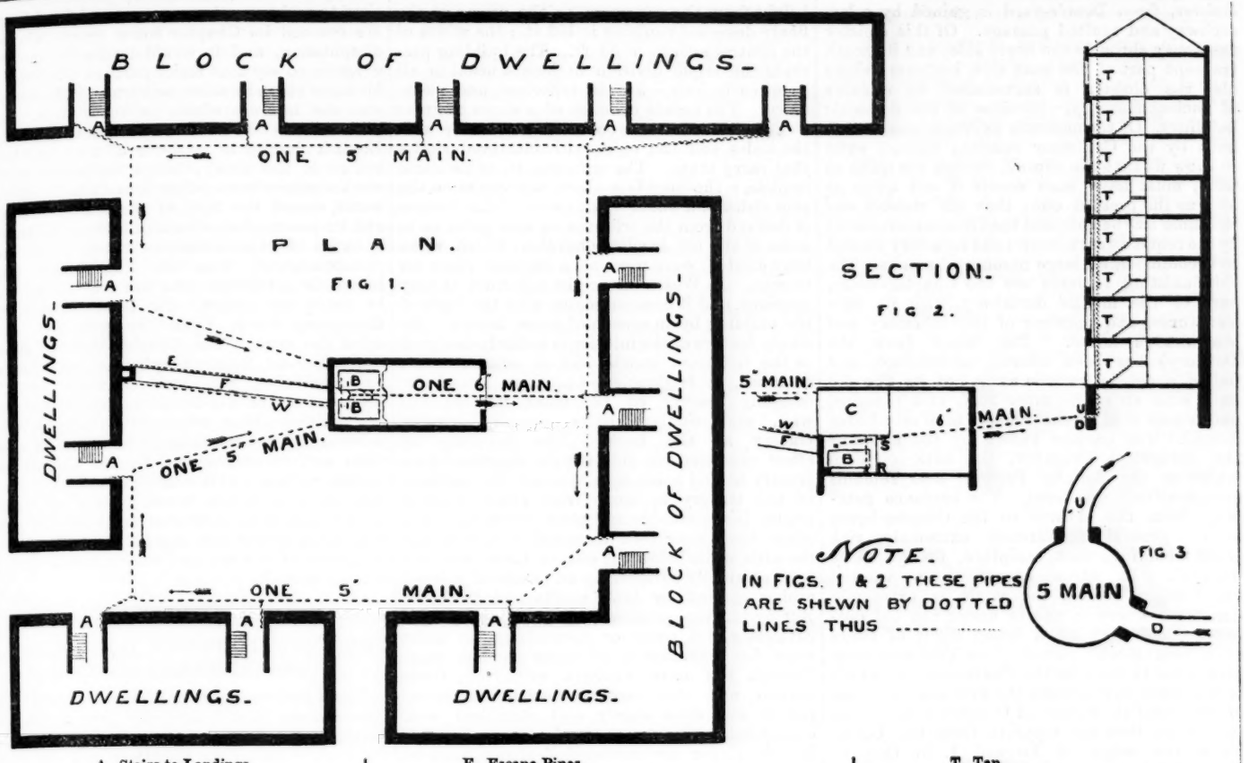
Wyman & Sons Photo-Litho

C^t Queen S^t London W.C

THE BUILDER, OCTOBER 10, 1885.

Wyman & Sons, Photo-Litho. C^t Queen S^t London, W.C.

SHOPS AT STREATHAM.—MESSRS. WHEELER & HOLLANDS, ARCHITECTS.



A. Stairs to Landings.
B. Boilers.
C. Warm-water Cistern.
D. Down Pipe (return).
E. Escape Pipes.
F. Flue, to be carried where convenient.
R. Return Pipe from Cistern, with Valves.
S. Self-acting Valve.
T. Tap.
U. Up Pipe (flow).
W. Cold-water Feed Pipe.

Suggested Arrangement for Hot-Water Supply to Blocks of Dwellings.

SUPPLYING TENANTS WITH WARM WATER FOR DOMESTIC USES.

WHERE a number of tenants occupy dwellings under the same landlord this becomes practicable, as warming water upon a large scale can be done so cheaply that all tenants would find it to their advantage to pay the necessary charge for such a convenience. But where this would be the most practicable, and therefore beneficial, is in those enormous blocks of buildings which we now erect in most of our large towns, designed for the homes of respectable mechanics and others of moderate means.

The illustraiion shows an economical arrangement designed by Mr. R. Felix Campbell, of Queen's Park, London, W., for thus supplying warm water for domestic uses to about 100 taps, fitted in any convenient position on as many landings.

The plan, fig. 1, shows the usual open square surrounded by four such large blocks of dwellings. In the centre, in an excavated space under the pavement, are shown two small Cornish boilers, B B, fixed under the warm-water cistern, C. By thus keeping this warm-water cistern, C, close down over the boilers, not only is the heated water kept in the warmest position, but where there is a constant supply of cold water there would be no necessity for having any preparation made to carry a large cistern in the roof. For the feed supply, a cistern large enough to allow the ball-cock to work freely, would be sufficient, fixed at the top of one of these blocks of dwellings. By a peculiar arrangement of the connexions, see fig. 3 (an enlarged section of the main pipe), only one main is required to carry the warmed water around to each block of dwellings, whilst the small wrought-iron pipes, U and D, would keep the supply of warm water constant at every tap, T, whether frequently drawn off or not. By such a system of one large main instead of the usual method of two smaller mains, the friction to the water is much less, giving a very rapid and certain circulation, thus enabling the heated water to pass to a very considerable distance. Fig. 2 is a section through the boiler-chamber and a block of dwellings, showing the two wrought-iron pipes, U and D, for conveying the warm water to the tap, T, on each landing. The return pipe from the warm-water cistern to the boilers, and the usual valves for working either one of the boilers separately are shown near the letter R. A self-acting valve, S, is to regulate the circulation so that the temperature of the warm water in the mains and branch pipes would average from 190° to 200°, or as may be required. The action of this valve would be to prevent the warm water circulating into the cistern until the water leaving the boilers had attained that temperature, thus providing for use the hottest water direct from the boilers, which, when not required for immediate use, would pass through the 5-in. main into the large cistern, C, for future use. The mains to be laid in channels, and all the pipes and the warm-water cistern to be coated and covered in to prevent waste of heat.

The advantages of this arrangement to the tenants would be considerable, for it would give facilities for cleanliness in home and person, and it would also be—by the burning up of all ashes and refuse which, if mixed with small coal, would be the only fuel required for the boilers,—comparatively costless. The chances of illness would be much lessened by a constant supply of warm water at all hours night and day, the which is frequently so immediately necessary and advantageous in combating with many causes of illness, excessive fatigue, &c. There would be much comfort, economy, and quickness by the use of the heated water for breakfasts and teas, and in the cooking of vegetables, &c., as a stick or two of wood would boil such water without having to kindle the fire. In those families where the wife has to leave her home to work as well as the husband, he would thus find some of the comforts of home ready on his return.

WESTMINSTER ABBEY.

THIS was the subject of Professor T. Roger Smith's lecture to the students of University College, at the commencement of the present session on Monday afternoon last, when there was a large attendance of students and their friends, including the Dean of the Faculty of Arts and several of the Professors.

Professor Roger Smith said he claimed for the abbey a richness of historical associations, and a wealth of personal memories and memorials which placed it second to no building in Christendom. He further claimed for it the distinction of being among the foremost, if not the very foremost, work of art of English origin. The abbey was a monument of English design, English workmanship, and English materials, and had helped to form the taste and foster the devotion of many generations of English men and women; and on all these grounds it held the very highest place among all works of art, whether of architecture, painting, sculpture, or music, designed and wrought in this country, and by men of English birth. A Christian church stood on the site of the abbey about nine hundred years ago, but of that building we knew practically nothing. It was succeeded by a second church erected by Edward the Confessor, which in its turn gave place to the present abbey. The building as we saw it was begun by Henry III., and continued in various reigns down to William and Mary, if not Queen Anne, the western towers having been added by Wren in 1696 and following years. Most of the exterior has had to be renewed, owing to the decay of the stone, and much of it had been more than once so dealt with. No part of the exterior was quite as the original builders left it, and much of it had been sadly blackened and deteriorated by smoke, dirt and decay, and clumsy repairs. On the other hand, the interior was, except for the sad loss of its coloured glass, almost as originally built. At the end of the north transept was a dignified north portal, which was originally, and one day would again be, a grand entrance,— finer, indeed, than most English churches or cathedrals could boast. The French and German architects in the Middle Ages cared far more for great and elaborate doorways than our own. We, indeed, had only one portal (the west entrance to Peterborough) that could be compared with the great enriched porches of Amiens, Reims, or Strasbourg. Just under the shadow of the western towers nestle some low stone buildings of irregular outline and domestic character, possessing great interest. They are part of the ancient abbot's house, and the broad mullioned window is that of the famous "Jerusalem Chamber," which was the scene of the death of Henry IV. Formerly there stood, not far from the present entrance to Dean's-yard, a gate-house of Edwardian architecture, containing two chambers, both used as prisons. Raleigh, Lovelace, and Hampden were amongst those who were here confined. Near here also stood the Almonry, founded by Henry VII., for thirteen poor men. In this building Caxton set up his first printing-press, and in its precinct was produced the first printed book in England. Entrance to the

cloister, from Dean's-yard is gained by a low archway and vaulted passage. Of this cloister the abbey shuts in the north side, and its south transept part of the east side, but everywhere else the cloister is surrounded by remains of ancient masonry,—portions of the monastic buildings. Of the monastic buildings and church built by the Confessor remains enough exist to show us that the church, though not quite so wide, must have been nearly if not quite as long as the present one; that the cloister was the same size as now, and that it was surrounded by the requisite dormitories and refectory needed to accommodate a large number of monks. The chief existing remains are the Chapter-house, part of the monks' dormitory with its substructures, and portions of the infirmary and the abbot's house. The latter (now the Deanery) has been altered, modernised, and pulled about in various ways, but its fine old hall, with an open-timber roof, still remains, and is now used by the scholars of Westminster School. The parlour known by the name of the Jerusalem Chamber, the ante-room to which is the Jericho Parlour, also remains comparatively unaltered. The entrance gateway from the cloister to the Chapter-house is in general appearance extremely rich with mouldings and sculpture, though sadly decayed. It gives access to a vaulted vestibule, of which the vault is extremely depressed where it passes under the old dormitory, and then up a broad flight of stairs to a magnificent portal. The Professor next proceeded to describe the Chapter-house, which is famous as having been the first meeting-place of the English House of Commons from the time when they sat separate from the Lords. From the reign of Edward I. to that of Henry VIII. this was habitually if not universally their meeting-place. After this period the Chapter-house was converted into a depository for records, and was mutilated in the most reckless and ruthless manner. About twenty years ago the records were turned out, and Mr. Gladstone obtained, in 1866, a vote for a large sum of money wherewith the Chapter-house was restored to its original condition, on the ground of its early connexion with the House of Commons. The date of the original erection of the Chapter-house is 1250. On passing into the abbey church itself, the first impression of the visitor is one of overpowering height and extent. Henry III. in the year 1320 built a Lady Chapel east of the choir of the Confessor's Church. (This Lady Chapel was afterwards swept away to make room for the far more grandiose Lady Chapel built by Henry VII. and known by his name.) What followed was extremely characteristic of the ordinary mode of procedure in the Middle Ages. Henry, after a considerable interval of time, began to pull down the eastern portion of the Confessor's Church,—a fine, large building, be it remembered, but one that had simply gone out of fashion, being two hundred years old. On the site of the old church Henry built his new one, beginning from the east with the presbytery and chapels. He next pulled down and rebuilt the transepts and one bay of the nave; and, lastly, he rebuilt the Chapter-house. There was more than one peculiarity in the planning of Henry's building. The most obvious one was that, instead of ending with a square east end having a noble east window, as was customary in England, the church ends in a polygonal east end, known as an apse (showing three east windows of moderate size, two of them seen aslant), and having a series of subsidiary chapels clustering round it, as was customary in France, where such an arrangement was called a *chevet*. Canterbury Cathedral and Tewkesbury Abbey Church have the presbytery similarly arranged, but these, with Westminster, are the exceptions which prove the rule for England. There could be no doubt that the entire design must have been suggested by the great cathedrals going on in France at the time; and Sir Gilbert Scott inferred, probably correctly, that an English architect was sent to France to see and study for himself the works in hand at the time at Amiens and Rheims, since, though the scheme is French, the details are English. Another curious if not unique peculiarity at Westminster is that the cloister encroaches upon the aisle of the transept,—in fact, cuts a corner out of the church, a circumstance which, in the Professor's opinion, denoted that the transepts of the original church had no aisles. No other English cathedral has a nave so high in proportion to its width. The height from the pavement to the crown of the finely-designed vaulting is 103 ft.; the width of the central avenue is 35 ft. The building presents the triple division in height usual in all great cathedrals,—arcade, triforium, and clear-story. The arcade consists of a series of great richly-moulded arches connecting the nave with the aisles, and the piers with clustered shafts that carry them. The triforium is, as its name implies, a thoroughfare above the vaults on the side aisles and under their roofs. This feature is derived from the tribunes or side galleries in some of the old basilica churches, which, when they existed, were used as a separate place for women. In Westminster the triforium is very spacious, and it communicates with the body of the building by an arcade of great beauty. No single feature of the interior is so finely designed as the triforium arcade, and, in addition to its elegance, it is double,—*i.e.*, there are shafts carrying tracery on the front face of the wall, and similar shafts carrying similar tracery at the back. The intricacy of effect produced by this simple expedient (the tracery behind being seen through the openings of the tracery in front from every possible angle), is remarkable and most charming. The aisles have their own traceried windows, and the aisle walls below the cills of these windows were originally enriched by an arcade of pointed arches carried by little shafts and trefoiled. But by far the greater part of this has been ruthlessly cut away or covered up, to make room for monuments of more modern date. Though the nave exhibits work of three periods, and that erected during the latest period was done slowly and stretched over considerable time, no radical change is made in the larger architectural features such as can readily be detected in comparing the west and south walks of the cloister with the east and north. The ritual choir or enclosure for the choristers and clergy is west of the transepts instead of being in the presbytery. This is an arrangement common in Spanish churches, rare in English ones, but it was necessitated by the comparative shortness of the presbytery and by the wish to form a secluded and central place, high above the general level, and screened in on all sides, where the body of the Confessor should be buried. This space, known as the Confessor's Chapel, is behind the altar-screen. Henry VII.'s Chapel is admitted to be the finest work of English fifteenth-century or Perpendicular architecture, and alike for rich and daring design and consummate skill in execution deserves admiration. This chapel is like a little church, having its own nave and aisles and apse. The vaulting of the nave presents a *tour de force*, as it seems to rest upon pendents which appear to be hung in the air, though really they are carried by strong arches most artfully concealed. The central object in this chapel is the tomb of Henry himself,—a most interesting object, from an architectural point of view. It is surrounded by a splendid grille or metal-work enclosure of the same workmanship as the entrance-gates, of debased though rich Gothic design, but still unmistakably Gothic. The grille and the gates would be among the latest works to be executed in completing the chapel, and they belong in point of date to the closing year of Henry VII., who died in 1509, or perhaps to a still later date. The effigies of the king and queen within this enclosure, and the tomb upon which they repose, are said to have been completed by 1518. They are completely Renaissance, and were executed by an Italian sculptor named Torregiano. Thus we have here in the closest proximity a most striking instance of that remarkable change of temper, manners, and taste which marks the close of the Middle Ages and ushers in the modern. Of all the ancient painted glass in this chapel, and, indeed, throughout the abbey, hardly a shred remains. In concluding his paper, the Professor dwelt at some length upon the historical associations of the abbey, and enumerated some of the principal tombs and memorials. These include the monument, though not the grave, of our greatest poet, and the tomb of Chaucer, who held the post of clerk of works to the abbey for a short time, and to whom was leased, in an agreement now existing, a house standing on a spot over which now a part of Henry VII.'s Chapel extends. Among architects, Sir William Chambers, one of the Wyatts, Charles Barry, Gilbert Scott, and George Edmund Street lie here. Scott for many years held the appointment of Architect to the Abbey. He devoted an immense amount of time to seeking out every part of its history. He rescued its Chapter-house from ruin and dilapidation, and it would be hardly an exaggeration to say that many parts of the building he knew stone by stone, so keen and affectionate was the interest which he took in it. The lecturer said he had failed to find that a single English painter or sculptor of note had been buried in the abbey, though specimens of the work of all our best sculptors, and alas! of all our worst, crowd the floor of the abbey. Science and its practical applications have so illustrious a series of representatives among those here commemorated that an Englishman must indeed be indifferent who can feel no pride as he reads the names,—Sir Isaac Newton, Sir Humphrey Davy, Lyell the geologist, Herschel the astronomer, Charles Darwin, James Watt, Telford, Robert Stephenson, and Brunel. In conclusion, the lecturer made graceful reference to the late Dean Stanley, who himself had written these words,—"So long as Westminster Abbey maintains its hold on the affections and respect of the English Church and nation, so long will it remain a standing proof that there is in the truest feeling of human nature, and in the noblest aspirations of religion, something deeper and broader than the partial judgment of the day and the technical distinction of sects."

THE ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

The Fourteenth Annual Report of the Local Government Board, 1884–85,* just to hand, is divided into three main sections or divisions, viz.:—I. "Relief to the Poor and the Poor-Rate." II. "Local Government and Public Health." III. "Local Taxation and Valuation." From the first section it appears that, notwithstanding the increase in the population of the country, there has been a decrease of pauperism during the year covered by the Report. In the metropolis and elsewhere there would appear to have been considerable activity during the year in providing new workhouses, infirmaries, and schools for Poor Law purposes, or in arranging for the enlargement of existing buildings.

The second section of the Report contains statistical and other information of much interest to the sanitarian. It appears that the Local Government Board, since its constitution in August, 1871, has sanctioned the borrowing, by urban and rural sanitary authorities, of 31,567,364*l.*, by far the larger proportion of which has been appropriated to the carrying out of sanitary improvements in urban districts, under the provisions of the Sanitary Acts and the Public Health Act, 1875. Forming part of the amount mentioned is the sum of 2,083,353*l.*, borrowed under the Artisans' and Labourers' Dwellings Improvement Act, 1875, since 1876. Under Section 243 of the Public Health Act, 1875, the Board had recommended the Public Works Loan Commissioners during the year to make advances amounting to 616,988*l.*, at a reduced rate of interest, to urban and rural Sanitary Authorities. The only works in respect of which the Public Works Loan Commissioners are willing, upon the recommendation of the Board, to advance money at a low rate of interest, are works of primary sanitary importance, such as water supply, sewerage and sewage disposal, and the provision of hospitals. During the year a number of Sanitary Authorities, with a view to repayment out of the Parliamentary grant, appointed medical officers of health and inspectors of nuisances (under the General Orders of the Board), the number of appointments in existence during the year (1,136 medical officers and 1,037 inspectors of nuisances) showing an increase upon the numbers recorded in previous Reports of the Board, but these figures do not show the total number of applications received, as, in consequence of the arrangements appearing to the Board (either from inadequate salary or otherwise) to be unsatisfactory, they felt bound in some cases to decline repayment. The Provisional Orders issued by the Board during the year included several under the Public Health Act for schemes of drainage. Among the more important of these were the Lower Thames Valley Orders (the one authorising the Lower Thames Valley Main Sewerage Board to purchase lands at Mortlake for the disposal of the sewage of their

* London: Hansard & Son, and Eyre & Spottiswoode.

district, and the other extending the time allowed for the execution of their duty by the Main Sewerage Board, and continuing the exemption from penalties under the Thames Conservancy Acts), which were contested before a hybrid committee of the House of Commons, and were not confirmed. The Select Committee made a special report, which, with the evidence, was printed and presented to Parliament.* With regard to water supply, the Board has interfered in several cases where the water was shown to be insufficient in quantity and unfit as to quality. On the application of any Sanitary Authority to the Board, under Section 62 of the Public Health Act, 1875, to determine what is the reasonable cost at which a proper supply of water may be required to be furnished to houses under the provisions of that section, where there is no Local Act in force in the district authorising a water-rate, the Board is empowered by Section 8 of the Public Health (Water) Act, 1878, to fix by Order, for the purposes of the first-mentioned section, a general scale of charges for the whole or any part of the district of the Authority. During the year the Board has fixed seven such scales. During the same period the Board had directed local inquiries, after public notice, to be held by its Engineering Inspectors in 453 cases. The majority of these related to applications from urban and rural sanitary authorities for sanction to borrow money for the execution of permanent works under the Public Health Act, 1875, the Public Health (Interments) Act, 1879, the Baths and Wash-houses Acts, &c. Fifty-nine of the inquiries related to petitions for Provisional Orders under the Public Health Act, 1875; thirteen to complaints under Section 299 of that Act of the default of Local Authorities in performing their duties; eight to applications for consent to the constitution of special drainage districts under Section 277 of the Act; eight to general scales of charges for the compulsory supply of water to houses under Section 62 of the Public Health Act, 1875, and Section 8 af the Public Health (Water) Act, 1878; and five to applications for suspension for a limited period of the operation of Section 3 of the Rivers Pollution Prevention Act, 1876. The inquiries also related to various other matters, such as the purchase of land for street improvements, the letting of lands under Section 177 of the Public Health Act, &c. By circular letters (copies of which are given in an Appendix) the Board drew the attention of sanitary authorities, both urban and rural, in England and Wales, to the provisions of the Public Health (Officers) Act, 1884, and the Disused Burial-grounds Act, 1884. The former Act prohibits proceedings being taken, except with the consent in writing of the Attorney-General, for the recovery of any penalty under the 193rd section of the Public Health Act, 1875, which imposes a penalty of 50*l.* on any officer or servant appointed or employed by the Local Authority who is in anywise concerned or interested in any bargain or contract made with them for any of the purposes of that Act. The Disused Burial-grounds Act, 1884, renders unlawful the erection of any buildings upon any disused burial-ground, except for the purpose of enlarging a church, chapel, meeting-house, or other place of worship. The Act does not, however, apply to any burial-ground which has been sold or disposed of under the authority of any Act of Parliament, nor will it prevent the erection of any building on a disused burial-ground for which a faculty was obtained before August 14, 1884.

From the third section of the Report, and from an appendix thereto, we find that the total amount received by the local authorities during the year was 53,412,055*l.*, which sum was made up of the following items:—Public rates, 24,477,086*l.*; private improvements (rates and expenses), 561,445*l.*; water supply, 1,932,321*l.*; gas supply, 3,217,284*l.*; tolls, dues, duties, and fees, 4,478,977*l.*; rents of property, 717,847*l.*; Treasury subventions, 2,391,090*l.*; other sources, 4,678,404*l.*; and loans, 10,957,601*l.* The expenditure of the same authorities during the year which was not defrayed out of borrowed money amounted to 43,508,243*l.*, of which sum 10,456,532*l.*, or nearly a fourth part, was spent in the payment of interest and principal of loans.

Among the most interesting of the appendices are those relating to the Metropolitan Water Supply, including the Reports of Colonel Sir Francis Bolton (the Water Examiner appointed under the Metropolis Water Act, 1871), and Professor Frankland. Sir Francis Bolton's Report describes in considerable detail the alterations and additions made by the companies to their works during the year 1884, with the view of increasing the constant-service system, which is now fast becoming general all over the Metropolitan area. The Lambeth Waterworks Company seem to have been particularly active in this respect, and it is recorded to their credit that this company, of their own act and not at the instance of the Metropolitan Board of Works or any other authority, have conferred the benefits of a constant supply upon the poorest and most densely-populated part of their district. "Deacon's waste-meters" have been or are being introduced into the whole of the ten districts of this company which have been put under the constant-supply system. With regard to the quality of the water supplied from the Thames and Lea, Dr. Frankland reports that it was, during the year under review, "exceptionally free from an excessive proportion of organic matter." Dr. Frankland concludes by observing that "the marked diminution in the fluctuations of quality which the river waters, and especially those derived from the Thames, have undergone, is undoubtedly due to the very much greater care and attention which are now bestowed by the several companies, both in selecting the best water which the rivers afford, and in purifying the water after it has been abstracted."

From the foregoing summary of its principal contents, it will be evident that the Fourteenth Annual Report of the Local Government Board contains (as might be anticipated) a great deal of valuable and suggestive information, worth attention and study by sanitarians and members of local authorities.

THE SANITARY CONGRESS AT LEICESTER.

We conclude our notice of the Congress of the Sanitary Institute at Leicester by giving a few extracts from some of the papers not yet mentioned by us.*

Mr. Arthur Ransome, M.D., F.R.S., President of Section I. (Sanitary Science and Preventive Medicine), took as the subject of his address "The Success of Sanitary Effort." With regard to one disease, consumption, he said,—Hitherto this disease has not usually been classed amongst those that can be prevented by sanitary measures; it has been supposed to be mainly a matter of nutrition and of circumstances beyond the control of local authorities; but Dr. Buchanan has demonstrated the enormous ameliorating influence of drainage upon this disease. It appeared to me that it might be desirable to ascertain what was the limit of its preventibility. I had noticed that the disease was comparatively infrequent in the place in which I myself live, and it occurred to me that I might ascertain how many cases originated in the different parts of the locality. A great portion of it is composed of deep porous soil, but it is surrounded by boulder-clay, the result of glacial drift, and a great part of Bowdon, and parts of Dunham and Altrincham, are built upon a thick bed of sand, in many places over 100 ft. in thickness. The climate is thus rendered more temperate, and the air and soil drier. After the wettest weather the paths speedily become dry, and the basement story of a house is often as dry as its attic. It has the further advantage that it is virgin soil. The sand is as pure and free from organic matter as in the days when it was deposited by ice floes or was silted up by the estuary of the Mersey. No house is ever built upon freshly-made ground, or in pits that have been filled up with refuse. The locality is also well sewered, and has a plentiful supply of good water. Moreover, the inhabitants are for the most part well-to-do people. Out of 2,559 of population at the last census, only about 500 are poor, and live on the low-lying clay lands that surround the sandy downs upon which Bowdon is built. The remainder dwell in well-built, salubrious houses; they are well fed and comfortable in their circumstances. It will thus be seen that such a community are in a position peculiarly well fitted to preserve them from attacks of tubercular disease. I was, however, hardly prepared for the result of my inquiries. I obtained from the superintendent registrar of deaths an extract from the death register of all the deaths from diseases of the lungs occurring in Bowdon in the ten years 1875–84. Of these, twenty-two were from phthisis, but eleven of them took place in the low-lying clay lands before mentioned, and nine of the remainder were found to have contracted the disease before coming to Bowdon. This leaves two to be accounted for, and one of these was the secretary to the City Mission in Manchester, who was, therefore, constantly obliged to attend crowded evening meetings in different parts of the town. The other was a merchant's clerk, who went to town at eight every morning, and did not return until seven p.m. Such a record as this is a strong testimony to the truth of the observations made by Drs. Bowditch and Buchanan as to the influence of a well-drained porous soil upon the disease, and it holds out to us the hope that when further attention is paid to this point, a large part of the terrible mortality that still takes place from this disease may be prevented, and that consumption may cease to be, as it has been called, "the scourge of the English people."

Mr. William Marcet, M.D., F.R.S., took as the subjects of his address as President of Section III. (Chemistry, Meteorology, and Geology), "The Distribution of Carbonic Acid in Nature, and its Sanitary Relations," and "The Influence of Altitude on the Chemical Phenomena of Respiration." From the first section of this address we extract the following paragraph:—Experiments having important sanitary bearings were made by Claude Bernard in 1857. He has observed that birds can live when accustomed by degrees to breathe air more and more unhealthy by admixture with carbonic acid, while other birds, in perfect health and taken from the open air, when subjected to this same bad air would die either at once or very rapidly. It follows that animals weakened by exposure to impure air are less in want of air holding its full proportion of oxygen than healthy animals. The practical bearing of this experiment is very obvious, and it explains how people living in small, insufficiently-ventilated dwellings, and having to keep their windows always closed against the cold air, can apparently be doing well. This satisfactory condition is, however, a delusion and a snare, and the fact of the inmates of such houses withstanding impure air with apparent impunity must be owing to a weak state of health, that same air being unfit for persons of a strong and robust constitution. This also explains how people of advanced and sometimes of middle age require less fresh air for the enjoyment of health, which they undoubtedly do, than others in the full possession of youth and strength.

"Sanitary House Management" was the title of an able paper by a foreign lady, the Countess de Viesca. In the course of it she observed that a clever architect may design and build a house with all the appliances that his skill and experience can suggest, and make it a domestic "Temple of Hygeia" in theory, but unless the occupiers are able and ready to put all those clever contrivances to their proper use, and to see that they are always kept to that use, and never allowed to break down through "sheer neglect," that palace of health may become the home of dirt, foul smells, impure air, and all the evils that follow in their train, ill-health of mother and children, ever-recurring sickness, and perhaps death. It is here that the lady's functions come in. It is the servants of a home whose properly directed work has to keep it clean and sweet. It is the lady of the house only who can regulate that labour, and, by adding to it her own intelligent supervision, can make it effective for cleanliness, and for the health to which that cleanliness is the first and greatest step. The Institute, numbering members of all classes, laity as well as professional sanitarians, and appealing to all, has peculiar opportunities of educating the public, the dwellers in houses, to their share of that work to which all must lend their individual aid before success can be counted on as certain. When the ladies,—the mistresses of the houses,—come to see that they can do more and must do more than merely call in masons and plumbers when drains and pipes go wrong, and that, by understanding the conditions that make them go wrong, and avoiding these, they can better secure the bodily welfare of their near and dear ones than a legion of doctors;

* See Parliamentary Paper, No. 272, Session 1884.

* For the papers already noticed, see *Builder*, pp. 422, 442, 443, 457, and 458, *ante*.

when it has taught ladies this, then the Sanitary Institute will not only have begun but more than half finished the greatest sanitary work of the age. The writer having lived in Spain and France, and managed her household both in Spain and England, was able to appreciate the advantages which the English attention to sanitary matters gives to residents here. She knew the hopeless state of dirt and smells produced by the utter absence of any sanitary provision in parts of Spain, and for which they were now suffering so awfully. She had long lived in England and rejoiced in the opportunities given here for those who will be and live clean; and yet in England she has seen dirtier houses and smelt worse smells than either in France or Spain, arising only from laziness of servants and want of supervision by the mistress.

Mr. John Underwood read a paper on "The History of Sewerage and Sewage Treatment at Leicester," from which it appeared that various methods of treatment by precipitation have been tried, but with, to say the least, very indifferent success. The two last very dry seasons have put a great strain upon the resources of the corporation at their works, and there being for a long time together during the summer droughts no water flowing, other than the small quantity passed from one pond to another by a very slender canal traffic, the river below the town has, at the end of the summer, been composed mainly of the Leicester sewage effluent. In September last year an inquiry into the condition of the Soar was held at Leicester by Major Tulloch, of the Local Government Board. The inquiry resulted in a decision that the state of the river was too bad to be much longer tolerated, and the Town Council undertook to proceed at the very earliest time to consider the matter with a view to an improvement, and this they have been engaged in doing during the last year. Looking to the experience gained, one point was by most people considered settled, that the mere treatment by lime or chemicals would not meet the case of Leicester, and that the application to land was the only solution. A proposal was made to utilise and extend the present pumping outfall station, and lift the sewage to a height of from 150 ft. to 170 ft. on to an estate of 1,362 acres under the control of one owner, the distance being about one mile and a half. In June last the Council approved a report from the Highway and Sewerage Committee, that 100 acres of this estate should be purchased, and the remainder leased for thirty years at an annual rent of 45s. per acre. The idea of the committee is to use this mainly as a broad irrigation area, and it is expected that with this estate in hand, the corporation will be able to deal with the sewage of the town without risk or interference for many years to come.

Mr. J. Gordon, C.E., Borough Surveyor of Leicester, read an elaborate paper on "The Drainage of Continental Towns." After giving a history of the sanitary movement in Germany and Switzerland, mentioning Hamburg, Berlin, Frankfort, Dantzic, Zurich, Stettin, Basle, and other towns, the author indicated the leading principles of sanitary works on the Continent. With regard to Berlin, he observed, under the head "Materials and Construction of Sewers," —"One noteworthy feature of Berlin is the principle adopted of having a sewer on each side of the street, which, so far as the author is aware, has not been attempted elsewhere. This principle has no doubt enabled the author of it, Mr. Hobrecht, to adopt pipes in cases where brick sewers would otherwise have been requisite, and accounts to a great extent for the great excess of pipes over brick sewers for a city of such a metropolitan character as Berlin, with its million and a quarter of inhabitants, now is. Various reasons may be given for the choice of this system beyond that of desiring to confine the sizes of the sewers to that of pipes. The subsoil is surcharged with water, and consists of fine running sand, making it most difficult and costly to construct brick sewers watertight. The streets being generally wide, the adoption of a sewer on each side enabled the traffic to be carried on without interruption, and so shortened the length of the house-drains that the necessary fall for them could be obtained without the street sewer being laid so deep as would have been requisite if one sewer had been constructed in the centre. It can scarcely be conceived, however, that the plan has not been more costly than if one sewer had been adopted. Another noteworthy feature in the sewerage of Berlin is also the theory of the engineer, Mr. Hobrecht, that to prevent the formation of sewer gases as much as possible, steep gradients should be avoided. His argument is, that with branch sewers of steep gradients, a state of things is involved in which, during the night, and also with the minimum day flow, so small a portion of the invert of the sewer or pipe is covered by the flowing sewage as to leave a large portion of the sides of the pipe covered with slimy matter exposed to the action of the comparatively high temperature of the sewer. This acts upon and tends to dry it by evaporation, and thus to evolve in a greater degree a more pungent and dangerous sewer gas than would be the case if a greater portion of the surface of the invert could be kept covered with sewage flowing at a slower velocity. He urges also that branch sewers, with steep gradients, run practically dry, and that with a minimum flow matters that would float with a given depth of water on the invert are deposited, and not removed by the greater velocity of the maximum flow, and that, consequently, on this head also, it is better to ensure a sufficient depth of water on the invert moving at a velocity not more than sufficient to float forward all such solid matters as find their way into the sewers. Mr. Hobrecht has had the courage of his opinions, and has carried those views into practice by flattening all steeper gradients to 1 in 500."

Mr. Ernest Hart, in the course of a long address on "The Essentials of Local Government Reform," argued in favour of the simplification and unification of the primary area; the creation of one authority for all local business, and only one; the creation of county boards; the reorganisation of the local government officials; and the consolidation of local finance. He expressed his conviction that no system of administration, however complete in theory, upon a matter of such importance and complexity as the health and well-being of the community, can be expected to attain its object unless men of superior education and intelligence throughout the country feel it their duty to come forward and take part in its working. The system of self-government, of which the English nation is so justly proud, can hardly be applied with success to any subject, unless the governing bodies comprise a fair proportion of enlightened and well-informed minds. A more vigorous and intelligent public opinion on local government has yet to be created in many places, and until it is created the action of the authorities will be more or less hesitating and inconsistent. Many questions of vital importance are from their very nature incapable of being completely provided for by any amount of legal enactment, however minute and explicit. So large a discretion must of necessity be left to local authorities as to details, that in practice much will always depend on the energy and wisdom of those who compose such authorities. Moreover, there are limits to the power of any central authority to remedy the evils produced by local inefficiency. It may control, stimulate, and in some cases supplement the efforts of local bodies, but it cannot be a substitute for them. It seems, therefore, peculiarly incumbent, on those who have leisure, to take their share in administering local government. In this work not only will prejudices have to be overcome and inactivity quickened to exertion, but a sound judgment must be exercised as to the extent to which, and the limits within which, considerations of public welfare ought to interfere with the absolute rights of private owners of property, and even with the personal liberty of individuals. It is work, therefore, which cannot be performed without effort; but it ought to, and let us hope that it will, be zealously undertaken, now that Parliament and the nation is becoming alive to the importance of the subject.

Captain Douglas Galton's "Address to the Working Classes," which was the last item on the business programme of the Conference, was a very useful *résumé* of the conditions of a healthy existence. We quote a few passages of the concluding part of the address:—"The improvement of the home means less sickness and more energy for work. To the ratepayer it means a diminished poor-rate, whilst to the individual it means more opportunity for self-education and culture, and it opens out to every one the possibility of having a refined and comfortable home. The improvement in the standard of living and of house accommodation is only what has been going on gradually for centuries. We are told that in the fifteenth century, in the houses, such as they were, of the poor, the walls were of rough, unhewn stone, without cement, or of mud; the roofs of thatch or of rude straw; the windows unglazed; the floors of bare earth, without tile or boarding; the accommodation of but one room, or, at the most two, let the family have been ever so numerous, and their animal stock, where they possessed any, frequently sheltered at night under the same roof as themselves. And, indeed, such cottages were not uncommon fifty years ago. As a rule the working classes would be ashamed of such accommodation now. So they will in time be ashamed of living in bad unhealthy houses. . . . An improved standard of living follows education, and it may be fostered by legislation; but it must come from the people themselves. Therefore do not go away with the idea that Parliament or town councils can do everything for you. They can do something. Acts of Parliament may be necessary to assist sanitary progress and to enforce sanitary discipline, but for real practical progress we must look to our own exertions. Laws can do but little unless aided by the earnest, the strenuous co-operation of every individual member of the community.

> 'How small of all that human hearts endure,
> That part which laws or kings can cause or cure!
> Still to ourselves in every place consign'd,
> Our own felicity we make or find.'

However dirty the locality, and however poor the house in which you live, you can yourselves do much to preserve your health."

SOME MISCELLANEOUS EXHIBITS AT THE INVENTIONS EXHIBITION.

A few exhibits not hitherto noticed in the several articles which we have given on the contents of this Exhibition, claim attention at our hands.

In the East Arcade, at Stand No. 1,537, Messrs. R. H. & J. Pearson, of High-street, Nottinghill, show the "Pearson" patent combination open and close fire cooking range, which appears to possess many good points, and to be well worthy of the attention of visitors. It claims to be the only kitchener capable of baking and roasting simultaneously. The fire is on the slow-combustion principle; and the bottom under the fire, and the hollow cheeks forming the sides, are fitted with hot-air passages, through which the air is taken, and, becoming highly heated, is passed into the flues, thereby adding to the heating-power of the range. This atmospheric action is continuous, whether the dampers are open or closed, the effect of which is that the ovens are always in a warm condition; while, upon the dampers being drawn out, the full cooking-power of the range is, it is claimed by the exhibitors (and apparently with warrant), immediately brought into action. The hollow cheeks at the sides of the fire are arranged with openings and a valve through which the heat and flame of the fire pass into the flues, and, mingling with the heated air from the hot-air passages, ensure a very high degree of combustion.

In the north court of the South Gallery (Stand 387), Messrs. Geary & Walker, of Manchester, have an unpretending though meritorious display of their well known wood-block flooring. The specimens exhibited illustrate the almost universal adaptability of such floors for churches, hospitals, schools, and other public buildings, as well as their suitability for halls, corridors, and rooms in private residences. By simple combinations of different kinds of wood, very effective designs can be obtained with this flooring, so that borders can be obtained where needed, the result being an appearance resembling that of parquetry. This flooring has been and is being extensively used. It is laid in a particular manner, and with a specially-prepared composition, so as to ensure accuracy of fit and to prevent damp.

Messrs. George Waller & Co., of Holland-street, Southwark (Stand 1,475, East Arcade), exhibit a series of models of concrete-mixing machinery. For their patent concrete-mixer, with continuous action, made for steam or hand power, they claim special advantages, among which may be named "a more thorough and intimate mixing of the materials together, and also with the water, in less time than by machines on any other principle." It is further claimed for it that there is no delay by stopping the

machine, either to fill or empty it: even with charge work the cylinder can be filled and emptied when revolving. Furthermore, whilst most machines require a crane to wait upon them, or a jib to supply the hopper, this machine is of small elevation, and so arranged that the material can be delivered on to a stage by hand, and shovelled into the hopper; or, for large quantities, an elevator, worked by the machine, delivers the material into the hopper. The machine is self-contained, and portable.

Messrs. Alexander Wright & Co., of Millbank, show (at Stand 1,478) an interesting collection of instruments for the measurement, indication, and regulation of pressure, and for ascertaining the illuminating power and quality of coal-gas.

Mr. J. Robson, of London-street, Fitzroy-square (Stand 377, South Court), exhibits his patent drip-tiles for weathering cornices, chimney-stacks, parapets, &c. In one form the tile is made of terra-cotta, and is especially applicable to the weathering of brick cornices. It forms a hard top member, and is adaptable to any section of cornice. The lower edge being hollowed, an efficient drip is secured, and the rain-water is prevented from running down the face of the mouldings. In another form, the tile is adapted to the weathering of walls, chimney-stacks, &c. It is claimed that, while being thoroughly efficient, the use of this form of tile will effect a saving of 60 per cent. as compared with the cost of the ordinary tile creasing. It is very simple, consisting of a flat tile with a portion along one side inclined at an angle of 45°. The flat portion of the tile is embedded between the brickwork, the inclined part being made to slope downwards and outwards, so as to efficiently serve its purpose. These drip-tiles are coming into extensive use, and their merit has been recognised by the award to them of the Bronze Medal of the Inventions Exhibition.

Mr. R. W. Gardner (Stand 298, South Gallery) exhibits his useful self-closing window-fasteners, by the use of which it appears to be impossible for a window to be left unfastened when shut. The fastener possesses the further merit of being proof against any attempt to force it back by the insertion of a knife or other instrument between the meeting-rails of the upper and lower sashes.

Mr. William Rice, of Fleet-street (Stand 505, East Gallery), exhibits some interesting educational appliances, including a mechanical globe, specially designed to illustrate the alternation and varying lengths of day and night, the succession of the seasons, and other phenomena arising from the diurnal and annual motions of the earth. The same exhibitor shows "The Universal and Local Timekeeper," showing universal time, and indicating at a glance the local time at one hundred of the principal places of the globe.

The National Health Society have a Stall in the East Gallery, where their excellent Sanitary Leaflets and other publications may be had.

SOME NEW SANITARY APPLIANCES.

We have lately had an opportunity of inspecting, at the factories of Messrs. John Bolding & Sons, of South Molton-street, a few novelties in the shape of sanitary appliances now being introduced by that firm. First and foremost we must name their "Paragon" Lavatory, which fully deserves its name. It is fitted with a quick-action waste, without chain or plug, and with a very ingenious double-action supply valve. The act of turning over the lever shuts the waste and fills the basin for use. By reversing the lever the waste is opened and the basin emptied, and, in addition, the basin is rinsed by a sufficient quantity of water, which enters by a flushing rim all round the basin. The action appears to be perfect, and this lavatory seems likely to distance all competitors, so clean is it in working and so little trouble does it give.

Another excellent appliance now being introduced by Messrs. Bolding & Son is the "Simplex" after-flush water-waste preventing cistern for valve closets, which has been devised to meet a special difficulty, and is adapted for use with valve closets where it is compulsory to use a water-waste preventer. It is automatic in action, though not, for an obvious reason, on the syphon principle. The problem has been solved in a very simple manner, and the solution has met with the approval of the London water companies.

Bolding's "Kenon" syphon flushing-cistern is specially adapted for use with the "Kenon" hopper closet, or any other form of valveless closet, as, by a simple pull, the whole of the water in the cistern is discharged with great velocity, carrying everything before it. An excellent and very commendable feature of this combination of cistern and closet is that the cistern is fitted with a separate $\frac{3}{4}$-in. service for wetting the pan before use, the water being admitted by pressing the button of a spring stop valve. A special aperture is made in the pan for the admission of this water. The arrangement meets a long-felt want, and its cleanliness and efficiency will be obvious to all who examine it.

The "Kenon" cast-iron and lead soil-pipe junction, for connecting a leaden internal soil-pipe with an iron external pipe, is provided with a strong lead socket cap for soldering to the soil-pipe, making a good joint.

In addition to the appliances already enumerated, Messrs. Bolding & Sons are introducing some new valves and traps which have much to recommend them.

THE BUILDING ACT.

At a meeting of the Kensington Bench of Magistrates on Tuesday, Mr. W. Bird in the chair, Mr. J. C. Bailey was summoned, at the instance of the Chiswick Local Board, for erecting houses in Arlington Park Gardens contrary to the By-laws. He was also summoned for commencing the building without depositing plans.

Mr. Glen, instructed by Mr. Finnis, Clerk of the Board, appeared to support the summonses, and Mr. St. John Wontner defended.

Mr. Glen, in opening the case, said that at the end of last year Mr. Bailey submitted plans of the buildings, but they did not show the parapet wall. An amended plan was subsequently submitted showing the parapet wall. Relying on the amended plan the Board accepted it. It was afterwards found that the works were not being carried out in accordance with the plan, and a notice was served upon the defendant in consequence. No notice was taken, but Mr. Bailey proceeded with the erection of the building.

Mr. Arthur Ramsden, Surveyor to the Local Board, was called, and said a parapet wall was necessary as a protection against fire.

In answer to Mr. Wontner, Mr. Ramsden said Mr. Bailey wished to be summoned at once to have the matter settled. He appeared before the Board, but his application was not entertained. Witness was not aware that the defendant kept his men from work for several weeks in order that the matter might be settled. The Board were divided in opinion, and resolved to take proceedings by a majority of one. The by-laws have been in force since March, 1884.

Mr. Wontner maintained that the by-laws were unreasonable and not applicable to the present case, and said the parapet wall was inserted in the amended plan without the knowledge of his client. How could it be said that the by-laws were reasonable when six members of the Board out of a possible thirteen came to the conclusion that they were unreasonable? The Board, when it suited them, flung the by-laws to the wind. He called

Mr. William Stevens, Deputy District Surveyor of Hammersmith, who said he had seen the houses in question, and, in his opinion, they were constructed in accordance with the Metropolitan Building Act. It was not necessary to erect a parapet wall, although it would be an extra measure of safety. Mr. Bailey had constructed similar houses in Hammersmith, against which no objection had been raised.

The defendant was called and said the parapet would disfigure the houses.

Mr. Benjamin Hardy and Mr. George Edwardes, members of the Board, were also called, and gave an opinion that the by-laws were unreasonable and unnecessary.

The Bench retired to consider the matter, and, on returning, the chairman said they were unanimous that the by-laws ought to be enforced. He imposed a nominal penalty of 10s. in each case.

Notice of appeal was given.

REPORT OF THE ASSOCIATES' COMMITTEE, R.I.B.A.

Sir,—I should be obliged if you would allow me a small space in your columns to say that if, by some accident, any Associate of the R.I.B.A. has not yet received a copy of the Report to be presented at the general meeting of Associates on Monday next, I shall be happy to send him one, on his writing to me at No. 8, Delahay-street, Westminster, S.W.

G. Richards Julian,
Hon. Sec. Associates' Committee.

"FIREPROOF PACKING."

Sir,—Having noticed in the *Builder* of Sept. 28 an inquiry from "H. G. F." with reference to fireproof packing, I think you will find the material suitable for his purpose in the "mineral wool," now manufactured from blast-furnace slag, a supply of which I have received for a similar purpose, from Messrs. Fredk. Jones & Co., Perren-street, Ryland-road, N.W. Paul Lambert.

PREMISES IN BISHOPSGATE-STREET.

Sir,—In justice to Mr. T. P. Lilly, we would ask you to allow us to correct a statement made [p. 459, *ante*] as to the stone used in the erection of these premises. It should have been Chilmark or Wardour stone, not Tisbury.

Wadmore & Baker.

PROVINCIAL NEWS.

Hindley.—A new Free Library and Museum are about to be built at Hindley, near Wigan, from the designs of Messrs. Thomas Worthington and J. G. Elgood, architects, Manchester, at a cost of about 5,000*l.* A contract has been let for its erection to Mr. John Preston, of Wigan, and the work will now proceed forthwith.

Coventry.—The widening and improvement of Hertford-street at its junction with Broadgate have been consummated with the completion and opening of "Hertford-buildings," the extensive new premises of Messrs. Johnson & Mason, wine and spirit merchants and beer dealers. The architect of the buildings is Mr. H. W. Chattaway, and the contractor was Mr. T. Mayo.

Nottingham.—Owing to the encroachment on the Old Cattle Market at Nottingham, for the purpose of erecting New Municipal Offices thereon, steps are being taken for the formation of a New Cattle Market in the Eastcroft, on the south side of the town. Mr. A. Brown, Borough Engineer, was instructed by the Markets and Fairs Committee to submit plans showing the way he advised the New Cattle Market should be laid out, and these plans had the unanimous approval of the Committee, the cost of the undertaking being estimated at 27,500*l.* to 29,500*l.* The plans afterwards received the confirmation of the Town Council. The actual work was begun in June last, although the process of filling up and levelling the ground had been going on for some time. It is expected that the market will be completed by February or March next. The area of the market, including the main road on the north-west side, so far as this road adjoins the market, but excluding the area of the sidings and loading docks and approach road from London-road, is five acres. The actual area which will be covered by the stalls, pens, lairs, &c., is nearly one acre and three-quarters, the remainder of the five acres being occupied by roads and fences, and by the portion of land intended for the future extension of the auction market and night lairs for cattle. There will be two entrances, the main approach being from London-road by means of a bridge over the canal. London-road has been raised to the level of the bridge over the canal. It was intended originally to have two swing bridges, but some of the owners of adjacent property objected, and the alternative of raising the road was taken. In front of the cattle lairs is an open auction market, with large pens for cattle, sheep, pigs, &c. There are offices for auctioneers and telegraphic purposes, also pay-offices and market inspector's office, and a public waiting-room for payment of accounts, &c. The main and minor roads will be paved with dressed granite randoms laid on a concrete foundation, and the pens, stalls, alleys and lairs and auction marts finished with a perfectly smooth and impervious surface, but grooved so as to give foothold for the cattle. Mr. A. Brown, Borough Engineer, has undertaken the architectural and other works connected with the whole scheme, everything being done under his personal superintendence, Mr. Holloway being clerk of the works. The contractors for the various works are Messrs. Foster & Barry and Messrs. Bell & Sons, Nottingham; and Messrs. Keay & Co., Birmingham.

Tilbury Docks.—With reference to our notice of this undertaking on p. 418, Messrs. Perry & Co., of Tredegar Works, Bow, write:—"The hotel is being erected under the designs of Mr. Gruning and we are the contractors."

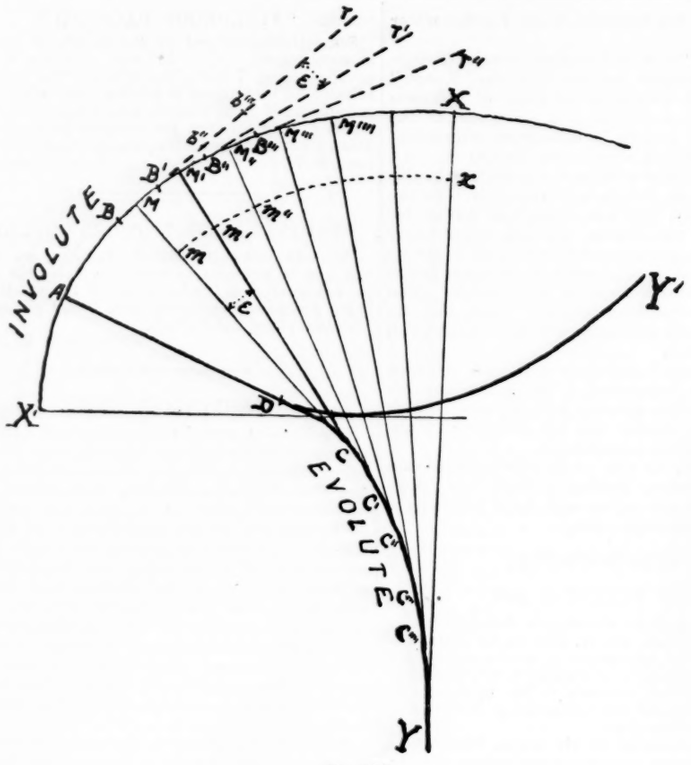


Fig. 177.

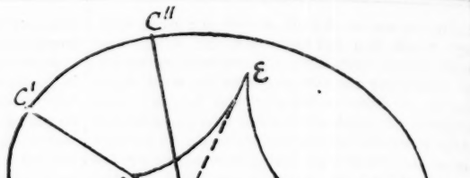


Fig. 178.

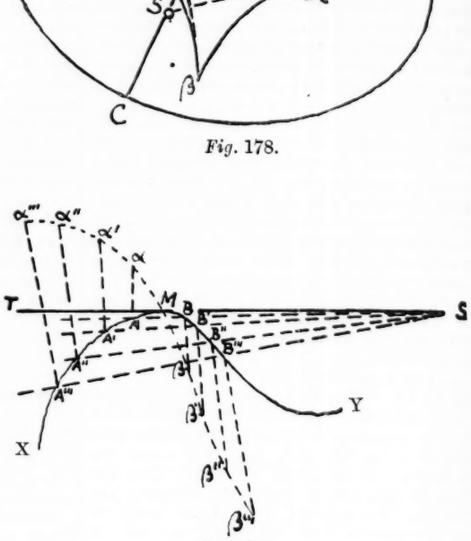


Fig. 179.

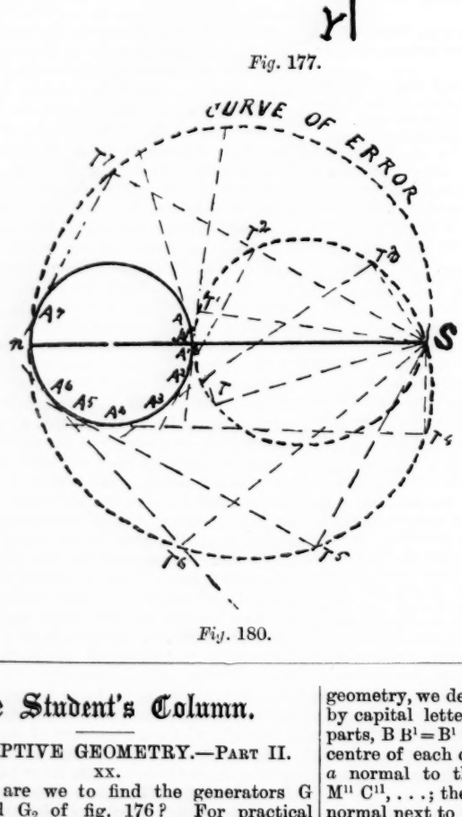


Fig. 180.

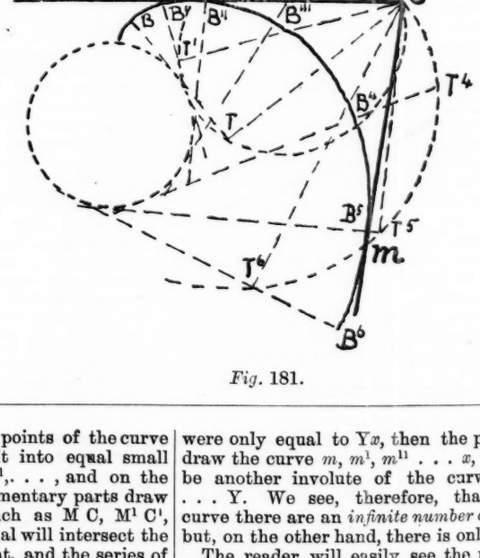


Fig. 181.

The Student's Column.

DESCRIPTIVE GEOMETRY.—Part II.

XX.

HOW are we to find the generators G and G_2 of fig. 176? For practical purposes, we think it is sufficient to find experimentally by the means of a few circles drawn from the centre S^4, the smallest circle that can be inscribed within the elliptical base, and the largest circle that can be circumscribed to the same ellipsis; then mark carefully the points of contact of these circles with the base: these will be the feet of the shortest and the longest generators of the cone on which the lowest and the highest points of the curve are to be found.

If we want the feet g and g_2 of the generator G and G_2 with mechanical accuracy, a more scientific method has to be followed, which we will give because it introduces the reader to very important properties of curved lines, as well as allows him to see why the elevation of the intersection may have sometimes four horizontal tangents and sometimes only two.

Firstly (see fig. 177), if we make any curve such as A B X (this being a question of plane geometry, we designate the points of the curve by capital letters), divide it into equal small parts, B B^1 = B^1 B^{11} = B^{11} B^{111}, . . . , and on the centre of each of these elementary parts draw a normal to the curve, such as M C, M^1 C^1, M^{11} C^{11}, . . .; then each normal will intersect the normal next to it in a point, and the series of the points C, C^1, C^{11}, . . . of the intersections will form a curve which is called the *evolute* of the first curve, which is called its *involute*.

It is evident that the involute A B X could be described by a series of arcs of circles, such as M M^1, M^1 M^{11}, ... drawn from the points C, C^1, C^{11}, . . . as centres, without there being any appreciable difference between the curve drawn by this means and the mathematical curve itself. For this reason the length of the normal M C is called the radius of curvature of the involute curve at the point M. It is by this means that mathematicians measure the curvature of curved lines; the shorter the radius, the greater the curvature; the longer the radius, the flatter the curve will be.

It is evident, also, that if the evolute curve C, C^1, C^{11}, . . . Y be given, and we fix a thread of length Y X against it in the point Y, we could describe the curve A B X by simply winding the thread round the evolute curve C, C^1, C^{11}, . . . Y. If the length of the thread were only equal to Yx, then the point x would draw the curve m, m^1, m^{11} . . . x, which would be another involute of the curve C, C^1, C^{11} . . . Y. We see, therefore, that for every curve there are an *infinite number of involutes*; but, on the other hand, there is only *one evolute*.

The reader will easily see the practical importance of this property of curves when he considers that the volutes of the Ionic capitals are the involutes of their eye, and can be drawn by winding a thread round the same. The Roman and the Italian methods of describing volutes by arcs of circles are also founded on what we have said about the radius of curvature. For our part, we have often found that after drawing a curve freehand, guided purely by our sentiment of beauty, we obtained a still greater refinement by re-delineating it with the help of a number of centres of curvature; besides which, we can thereby produce, if necessary, a series of curves parallel to the original curve, as in ironwork, for instance.

As examples of the character and properties of evolute curves, we shall say that if the curve A B X (fig. 177) were a parabola of the second degree, its evolute would consist of two infinite branches, D C Y and D Y^1, placed symmetrically above and below the axis A D of the parabola. The point D, where the evolute curve recoils

with a sharp angle, would be the centre of curvature of the parabola at its vertex A.

In an ellipsis (fig. 178) the evolute is an interior curve formed of four branches, such as $\alpha, \beta, \delta, \varepsilon$. We can now see how it is that there are points from which four perpendiculars can be drawn to the ellipsis, and that there are other points where only two perpendiculars are possible. From the very construction of the evolute curve we know that any perpendicular to the ellipsis will be tangent to the evolute, and we can see that from any point S outside the evolute only two tangents can be drawn to the evolute curve, whereas from the point S^1, inside the evolute, four tangents, such as $S^1 C$, $S^1 C^1$, $S^1 C^{11}$, $S^1 C^{111}$, can be delineated; these tangents are the plans of the generators G^h we spoke of in fig. 176.

We have selected as base of our cone an ellipsis which is a conic section, the laws of which are well defined, and to which we can draw tangents and normals according to well-known methods. But we are not restricted in our work to such mathematical curves, and we should be able to draw tangents and normals to any curve.

Through a point S *outside a curve* X A B Y *draw a tangent to the curve.* (See fig. 179.)

Of course, we could draw the tangent S T with a ruler without using any construction whatever, but there would be cases in which it would be very difficult to fix exactly the point of contact M. We can use the following artifice: from the point S draw a series of cords such as $A B, A^1 B^1, A^{11}, B^{11} \ldots$, produce perpendiculars such as $A\,\alpha$, $B\,\beta$, at the extremities of each cord and of the same length as the cord itself, then join the series of points $\alpha^{111}, \alpha^{11}, \alpha^1, \alpha \ldots \beta, \beta^1, \beta^{11}, \ldots$ by a curve; the point M where this curve will cut the original curve X A B Y will be the point of contact of the tangent. This is evident, for the law which governs the auxiliary curve we have constructed is also satisfied by the point M where the length of the cord is reduced to nothing, and where the perpendicular at the extremities of the cord would also be nothing. Of course, for drawing the auxiliary curve we have to trust somewhat to our natural instinct, but it will be found that this is far easier than one would expect before trying it.

Through a point S *outside a curve draw a normal to that curve.* (See fig. 180.)

We shall draw the normal by the help of what is called a curve of error, so called as being the result of a series of mistakes when trying to find the normal. In this method we must know how to draw a tangent through any joint of the curve given, and to make our operations all the clearer we give ourselves as selected curve a circle.

We mark on our circle a series of points such as A, A^1, A^2, A^3, and so on; to each of these points we draw a tangent such as A T, $A^1 T^1$, $A^2 T^2 \ldots$ and from the point S we take a perpendicular such as S T, S T^1, S $T^2 \ldots$ to each of those tangents; the series of the points T will form a curve which we call the curve of error. The curve of error is sure to touch our original curve; in our case it touches the circle in the points N and n, and S N is normal to the circle in both points.

The curve of error has the defect of not indicating with sufficient precision the point of contact N which the normal should reach, but it will be absolutely correct for the delineation of a tangent to a spire such as $B B' B'' B''' \ldots$ in fig. 181. The circular eye of the spire allows us to draw easily series of normals to the spire, and if on those normals we carry perpendicular lines from the point S we shall get a series of points $T, T^1, T^2, T^3 \ldots$ of a curve of error identical with that of fig. 180. The curve of error cuts the spire in two points M and m, and the tangents are, therefore, M S and $m s$.

Books.

Stone-working Machinery. By M. Powis Bale, Mem. Inst. M.E., Assoc. Mem. Inst. C.E. London: Crosby Lockwood & Co.

The above will prove to be a welcome addition to the class of practical hand-books upon the various kinds of mechanical appliances for facilitating the execution of public works. The author, in a modest preface, claims that "it is the first work of the kind published in this country," and very naturally appeals that due allowance should be made for any shortcomings that may exist; but a careful perusal of its pages enables us to express an opinion that a somewhat difficult task has been very successfully accomplished,—a difficulty, in no small degree, by having no book of reference upon the subject.

A short, but highly interesting chapter, by way of introduction, treats the working of stone from its earliest history to the period when its manipulation by the hand alone ceased to keep pace with the advance and requirements of the age. Only a thoroughly practical man could, in such brief terms, describe the various kinds of stone suitable for conversion by machinery. These are classified under four general divisions, viz., Limestone, Sandstone, Granites, and Slates, and are treated geologically, with valuable hints as to the best means of discerning their applicability; and a well-written chapter concludes with a list of the various stones for building purposes found in Great Britain, and the localities in which they are found. The third chapter is devoted to the important question of "the arrangement of stonework for general purposes," chiefly with a view to economy in working. The author gives a typical plan of the best manner in which to lay out such a plant, which bears on the face of it the consideration of one well acquainted with the requirements of the generality of cases. There is possibly no subject which requires the attention of a builder more than in the arrangement of his workshops and the motive-power for driving the various machines required in large building operations, and we can recommend those interested in such questions to carefully note what Mr. Bale has to say about it. In somewhat chronological order, chapter iv. deals with stone-sawing, wherein we learn that so far back as 1748 machinery was established at Ashford in Derbyshire for sawing and polishing marble, the motive power being water; whilst in 1730, in Aberdeen, granite was sawn and polished by other than manual labour. The circular-saw was invented in 1777 by Samuel Miller, of Southampton, who employed a horizontal windmill to work it; whilst the great Bramah has laid claim to the invention of "certain machinery for working wood, stone, and metals," and so the author gradually builds up a complete history of the process of mechanical sawing up to date, which is ably dealt with in chapters iv., v., and vi., including sawing with diamond points. Under the head of "Stone Dressing and Planing Machines" we have an exhaustive treatment of the most important branch of the subject. Thus chapter vii., which is elaborately illustrated, traces from the earliest commencement of the application of revolving tools (actuated by other than manual power), the various modifications and improvements that have been effected, with an amount of reliable detail, that considerably enhances the value of the work. Similarly the succeeding chapter on "Stone-moulding Machines" places before the student the question (hitherto unattempted) in a practical form; for the greatest care seems to have been taken to produce information not only affecting the general manipulation of the machine; but the most minute detail has not been omitted. And there is a pleasing argumentative tone pervading the book which places the reader on the best and most confident of terms with the author, which is not often the case in technical works. Pursuing his chronological system of treating the subject, Mr. Bale deals with "Rubbing and Surfacing Beds" in chapter ix., being careful not to omit mention of the necessary adjuncts for the process as equally in the following few pages on "Stone-recessing" and "Quarrying Machines."

We suppose a treatise on "stone-working machinery" would be incomplete without reference to those appliances extant for breaking stone; consequently, the specialities of Messrs. H. R. Marsden & Co. obtain full prominence in chapter xiv. Possibly there are no better means of acquiring a knowledge of the process of working slate, for the various uses to which it is now applied, than are provided in the volume under notice; and, seeing that this material is now so largely adopted, by reason of the facility with which it can be produced in marketable forms,—by machinery,—we have no doubt that chapter xv. will be read by those desiring information with considerable interest. The succeeding two chapters on "Miscellaneous Machinery for Working Stone" and "Cutting-tools" bring the practical treatment of the question to a highly creditable conclusion, a few well-chosen words of advice being added on the "Management of Stone Works."

Signatures of Ancient Sculptors. (*Inschriften, Griechischen Bildhauer mit Facsimiles herangegeben von Emanuel Loewy. Gedrückt mit Umterstützung der Kaiserlichen Akademie der Wissenschaften zu Wien.*) Leipzig: Teubner. 1885.

It sometimes happens that a very learned book, of purely professional intent, has incidentally and,—if it hail from Germany,—quite unintentionally, a popular interest. It is so with the ponderous volume before us. Five years ago, at the close of his student years, Dr. Loewy conceived the idea of a publication that was to be essentially monumental in its character; he set to work to collect in one volume every Greek inscription that contained a sculptor's signature. Subsidised by the Vienna Academy of Sciences, he was able to have every inscription cast and carefully facsimiled, so that the reproduction should be carried out with the utmost possible accuracy. Nor was he content with a mere unclassified corpus. The inscriptions are arranged century by century, with a cross division of geographical provenance. The idea was not quite a new one. In 1871 Dr. Hirschfeld had published his "Tituli Statuariorum Sculptorumque Græcorum," but his list had only extended to something short of three hundred. Since 1871 Olympia has given up a wealth of inscribed vases, to say nothing of Delos, Pergamos, and a host of other smaller excavations. There was ample field for a new collection, and Dr. Loewy has almost doubled the list. He has added also a searching, and we are inclined to think too voluminous commentary; we have not only the inscription in facsimile and a select interpretation, but we have a collection of literally every interpretation and every comment, however wild, that has been made upon it. We think that opinions might well be excluded which have nothing beyond antiquarian interest. It is possible to be too "durchgehend."

Obviously the chief value of such a book will be its scientific contribution to the history of epigraphy,—in this field its importance cannot be over-rated. It is complete even up to inscriptions discovered while it was going through the press, and it is, so far as we have been able to examine a book of such minute reference, perfectly accurate. It has also a series of model indexes. But it is the lighter human interest of the book to which we would call attention. Many a modern artist, and, indeed, many an educated layman, will never know, or care to know, the distinction between the Eukleidic and pre-Eukleidic alphabet, but every one who cares for Greek sculpture at all will care to know the fashion in which the artist wrote his name, what he cared to say about himself and his work. At the Coombe Pastoral play, beneath the great figure of the presiding Pan, the artist, by a pleasant conceit, inscribed himself, Greek fashion, "Conrad, the son of Dressler, made me and dedicated me, a beautiful offering to Pan." It was in such naïve statements that, as Dr. Loewy shows us, the ancient artist delighted in good sober earnest. "Mikkiades and Archermos made this beautiful statue together, and dedicated it to far-darting Apollo. They are Chians, and dwell in the city of their ancestor Melas." Often we have, as here, the picture of a friendly pair working together, father and son, or two brothers carrying on a craft traditional in the family. In the channellings of a pillar that supported a statue, a pious Ægean sculptor writes, "Son of Zeus, receive this blameless statue from Ekphantos, for he finished it and dedicated it a thank-offering to thee." Not always, even in these early reverent days, is piety the sole inspiring motive. One sculptor writes, "Alxenor the Naxian made; now do just look at me" (ἀλλ' ἔσίδεσθε).

Not only is there abundant charm in the matter of these early inscriptions, but the irregular form of the letters themselves and the arrangement of the lines has a beauty of its own. Print has been the ruin of our own stone-writing, imposing upon it a dull, mechanical regularity. One cannot look at an ancient inscription without feeling that the artist regarded it, not as a mere means for conveying information, but as a thing decoratively beautiful, worthy even, we find, sometimes to be written on the limbs of the statue itself, often adorning the hem of its robe.

And last, this book, with its countless

ancient autographs, fills us with a delighted sense of the personal character of Greek art. Egypt, with all her throng of monotonous statues, has left us no single artist's name; Greece, with her delicate fragments all too few, yet leaves us the names of more than 500 sculptors.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

15,816, Construction of Panelled Furniture, Doors, &c. A. J. Beckmore.

The frame of the bedstead, door, &c., is made of metal tubing, secured at the angles by screws. Grooved pieces fixed to the tubes by screws receive the panels. This construction is applicable to parquetry, and all kinds of joinery in which panels are used.

8,081, Non-conducting Coverings for Heat. S. Leoni.

Consists in lining the wooden jackets used to surround gas-cooking stoves and the like with slag, wool, or other non-conducting material, kept in place by a wire gauze netting.

7,144, Fireplaces, G. Wright.

The size of the grate is adjusted by making the front bars and half of the bottom slide in and out. The grate is arranged for either quick or slow combustion by making the bottom of bars or solid, or half of bars and half solid.

10,560, Gas Lamps, F. Siemens.

Consists of an arrangement for supplying air to the burner, carrying off the products of combustion, and a reflector to increase the lighting power of the lamp. A modified form of the lamp is made with four cones over the burner, air to support combustion ascending between the second and inner cones, while the products pass down between the second and third and ascend between the third and outer cones.

10,576, Street Lamp, H. Cullabine.

A reflector at the top of the lamp is made of an inverted conical shape with a central opening for the escape of the products of combustion. A novel arrangement for fixing the panes of glass by means of balls or blocks sliding upon pins, is also described in the specification.

11,181, Oil Cans, G. Pickford.

A thin rod or needle fits loosely in the spout of the can, preventing the entrance of dirt, and forming a guide down which the oil flows steadily. Projections prevent the withdrawal of the needle.

11,595, Line Reels, J. Nuttall.

The object of the invention is to provide an easy means of tightening the line in laying out brickwork. The reel is formed with a square bore, and fits closely upon the lower part of the spindle, which is also made square, but can revolve freely on the upper part of the spindle, which is made round. To tighten the line when the spindle has been driven into the brickwork, the reel is drawn on to the upper part, the slack of the line taken in, and the reel then put back on the square part.

11,660, Coating Wood, &c. H. H. Lake.

Sublimated zinc powder formed in process of reducing zinc ore, or the dust, which is one of the products of the distillation of zinc ore, is utilised for the purpose of metallising the surface of the wood or as a paint. The zinc is mixed with oil or any suitable vehicle with or without an admixture of colouring matter. After the wood has been coated with this composition it may be burnished and afterwards varnished.

11,817, Bolt for Doors, Windows, &c. E. J. Lines.

A spring bolt is fixed within a mortise in the door, and is actuated by a knob working on a slot. By this means greater strength is obtained than by fastening the bolt to the door with screws.

12,280, Composition for Coating Surfaces. A. Parkes.

Carbolic acid preferably in crystallised condition and camphor are mixed with resins, fatty acids, bituminous matter, &c. The proportion of the mixture of carbolic acid and camphor to the other substances should be as about 10 to 20. The ingredients are incorporated thoroughly either at the ordinary temperature, or at about 325° F., at which temperature they liquify. The product may be used as a thick coating, or may be thinned with turpentine or other suitable liquid, and applied like varnish.

13,915, Protecting Edges of Saws and other Tools, &c. P. Rees.

The edge of the saw or other tool is inserted and clamped in a groove in a piece of wood or other material, or between two pieces connected together by hinges.

NEW APPLICATIONS FOR PATENTS.

Sept. 22.—11,225, E. Jones, Gate Latches.—11,228, J. Totton, Improvements in Treads for Staircases, Passages, &c.—11,230, S. Farrar, Draught, Rain, and Dust Excluder for Doors.—11,234, K. Proctor, Improvements in Wheelbarrows.—11,270, E. Killick, Manufacture of Cement.—11,271, E. Killick, Improvements in Kilns.—11,282, J. Howie, Manufacture of Bricks, Tiles, and Slabs.—11,285, J. Ludlam and S. Harvey, Fire and Sound-proof Flooring.

Sept. 23.—11,309, C. Sullivan, Machine for Dredging for Wells and Subsoil Foundations.—11,334, E. Sloan, Window Fastener.—11,349. E. Edwards, Improved Clamp.

Sept. 24.—11,387, J. Colbran, Cooking Ranges.—11,395, A. Brogan, Manufacture of Plate Glass.—11,397, J. Beresford and W. Restall, Indicator for Water-closets and other Places.

Sept. 25.—11,403, J. Howlett, Water-waste Preventing Syphon Cistern.—11,405, J. Smith and G. Duxbury, Apparatus for Heating Public and Private Buildings.—11,408, H. Milsom, Paring Heads and Cutters for Wood-working Machinery.—11,441, G. Glanville, Improvements in Screws.—11,442, W. Doehring, Watchman Detector and Alarm Apparatus.

Sept. 26.—11,458, J. Farmer, Apparatus for Making and Pressing Bricks.—11,462, C. Walton, Machinery for Making and Pressing Clay into Bricks, Tiles, &c.

Sept. 28.—11,530, W. Gill, Releasing the Springbolt of Door Locks and Latches.—11,534, F. Cox, Improved Fastening for Sashes, Casements, &c.

Sept. 29.—11,547, J. Radford and A. Litchfield, Balance Door-Latch.—11,549, J. Parker, Manufacture of Fire-clay Bricks.—11,553, C. Lea, Construction of Door-knobs.—11,566, N. Thompson, "In and Out" Electrical Push Indicator.—11,607, E. Knight, Water-waste Preventers.—11,610, G. Redfern, Apparatus for Preventing Concussion in Water-pipes.

Sept. 30.—11,634.—L. Brodie, Porcelain Enamel Baths.—11,661, C. Groombridge and J. Rickman, Improvements in the Construction of Seats.—11,666, F. Thompson, Pocket Saws.

Oct. 1.—11,677, H. Shaw, Attachment for Screwdrivers.—11,680, F. Gowing, Sanitary and other Traps and Pipe-connexions for same.—11,690, E. Lucas, Improvements in Water-closets.—11,692, H. King, Apparatus for Opening and Closing Fanlights and Casements.—11,694, F. Simmons and J. Williams, Improvements in Lifts.—11,698, J. Rae, Simplifying Repairs to Water-fittings by an Improved Water-tap.—11,716, M. Holt, Ventilating Sewers and Deodorising Sewer-gas.

PROVISIONAL SPECIFICATIONS ACCEPTED.

9,150, J. Corlett-Williams, Conveying Smoke from Towns.—9,215, H. Doulton, Embossing and Decorating Window and other Glass.—9,435, T. Jenkins and Another, Ventilators.—9,760, C. Ryan, Machine for Shaping Wood, &c.—9,765, J. W. & J. L. Heward, Manufacture of Cut Nails and Machinery for same.—9,866, H. Swete, Anti-vacuum Valve for Preventing the Entrance of Gases into Water Service-pipes.—10,282, T. Beverley, Apparatus for Blowing, Ventilating, Exhausting, Pumping, &c.—10,538, F. Giraud and E. Nee, Gas-burner with Electric Ignition.—10,721, T. Mercer, Collection and Storage of Rain-water from Roofs, &c.—10,760, G. Garson, Suspension Bridges.—10,761, C. Smith, Facing Tiles or Plates for Concrete Constructions.—10,811, J. Hatch, Construction of Purlins for Glazing Purposes.—10,861, J. Macleish, Bramah Water-closet, filled with a Metallic Ground Valve.—10,882, H. Lee, Pile Drivers.—8,640, J. Richmond, Register Stoves.—10,038, W. Large, Improvements in Nails.—10,488, H. Chocqueel, Improved Screw-driver.—10,544, M. Parrington, Kilns, &c., for Lime and Cement.—10,547, E. Lange, Apparatus for Driving Ventilators, &c., in Buildings.—10,585, G. Butchard, Kilns.—10,586, W. Pope, Ventilators.—10,884, J. Welsh, Manufacture of Bricks, Pipes, Tiles, &c.—10,928, A. Common, Improved Water-closet.—11,112, W. Johnson and Another, Improved Construction of Walls for Buildings.—11,145, H. Girdwood, Glazing Windows, Doors, Frames, &c.—11,176, D. Nicoll, Foundation for Movable Cottages and other Structures.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

14,362, G. Redfern, Parquet Flooring.—16,111, J. Edwards, Improved Unpickable Lock.—17,031, W. Thompson, Apparatus for Drawing Ellipses.—10,213, A. Feist, Swing Joint for Pipes.—15,973, W. Teague, Improvements in Rock Drills.—16,452, B. Badham, Combined Manhole Covers and Ventilators for Sewers.—1,448, J. Müller, Manufacture of Tiles, &c., in Imitation of Majolica Ware.—10,314, E. Douglas, Improved Method of, and Apparatus for, Gritting Marble.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

Sept. 24.

By Hards & Jenkinson.

Lewisham, Elmira-street—A plot of freehold land £175

Sept. 28.

By W. H. Moore.

Folkestone—96 and 98, Guildhall-street, freehold ... 1,030
Dover—72, Maison Dieu-road, 75 years, ground-rent 5*l.* 17s. 505

Sept. 29.

By Crafter, Harris, & Co.

Brixton—17, Bonham-road, 82 years, ground-rent 7*l.* 10s. 345

By J. & W. Johnson & Co.

Bethnal Green—23, Turin-street, 64 years, ground-rent, 7*l.* 410
St. George's-street, E.—The Prince Regent Wine Vaults, freehold 3,000
2, St. George's-street, freehold 650
Leytonstone—1 to 6, Dores Behning-villas, freehold 1,410

By Herring, Son, & Daw.

Finsbury—Ground-rents of 6*l.* 16s., reversion in 21 years £335
Ground-rent of 5*l.* a year, reversion in 20 years ... 320
Streatham, Lewin-road—Freehold residence 3,300

By Bean, Burnett, & Eldridge.

Bishopsgate—30, Brushfield-street, freehold 1,170
Hoxton—3A to 6A and 9A, Bristow-street, 22 years, ground-rent 31*l.* 10s. 1,220
Kensington—30, Holland-street, 58 years, ground-rent, 5*l.* 15s. 785

Sept. 30.

By Mr. Gaiger.

Camden Town—227, High-street, 26 years, ground-rent, 5*l.* 5s. 600

Oct. 1.

By Messrs. Chadwick.

Lambeth—125 to 137 odd, Stamford-street, 23 years, ground-rent 25*l.* 3,340
139 to 151 odd, Stamford-street, 23 years, ground-rent 21*l.* 3,070
An improved ground-rent of 7*l.*, term 23 years ... 81

By F. Hards.

Lee, Lee-terrace—The Hollies, 24 years, ground-rent 15*l.* 1,235

Oct. 2.

By A. Richards.

Wood Green, Truro-road—Berkeley Cottage, freehold 600

MEETINGS.

Monday, October 12.

Royal Institute of British Architects.—Meeting of Associates. 7.30 p.m.

Inventors' Institute.—(1) Opening Address, by the Vice-President, Admiral Selwyn; (2) Mr. S. J. Mackie "On the International Inventions Exhibition." 8 p.m.

Wednesday, October 14.

Essex Archæological Society.—Visit to Fingringhoe Church. Start from Colchester at 1 p.m.

Miscellanea.

Discovery of Roman Pavement.—Another discovery of Roman pavement has just been made at Leicester, near the site of what is supposed to have been the residence of the Roman Governor of Roman Leicester. All the pavements hitherto discovered are from 4 ft. to 5 ft. below the present street level, but considerably above the level of the river, and the present pavement is not only at a lower level than the others, but is also below the level of the Soar, and was found while excavating for a cellar. The pavement, so far as it has already been unearthed, measures about 14 ft. by 4 ft., and is in excellent preservation. Although the *tesseræ* are rather larger and coarser than those previously discovered, the pattern is very distinct, and the pavement is in an excellent state of preservation. Local authorities suppose the pavement to be the floor of Roman baths which existed in Leicester some 1,700 years ago, when Leicester was a Roman town. Steps are being taken to have the relic preserved, and the Leicester Archæological Society are making arrangements to have the excavations continued with a view of ascertaining whether any further portions of the original edifice still exist.—*Times.*

Essex Archæological Society.—A meeting will be held on Wednesday next, the 14th of October, for the purpose of visiting Fingringhoe Church, and seeing the mural paintings recently discovered there. The church is interesting, and there is a good carved font-cover, well preserved. It is proposed to start from Colchester Castle for Fingringhoe at one p.m. precisely. On the way to the church, Donyland Hall will be passed. After inspecting the church, some very fine pargeting will be visited at Wyvenhoe,—also the church of Wyvenhoe, where there are some fine examples of monumental brasses, viz., of William, Viscount Beaumont, and Lord Bardolf, A.D. 1507; of Lady Elizabeth (Scroope), second wife of John de Vere, Earl of Oxford, and widow of William, Viscount Beaumont, 1537; and of Sir Thomas Westeley, priest, chaplain to the Countess of Oxford, 1535.

The National Agricultural Hall, Kensington.—In our notice of this building last week, it should have been stated that the glazing (103,000 square feet) is to be done on Mr. T. W. Helliwell's patent system. The zinc roofing is also to be done on Helliwell's system, the extent being 53,000 square feet.

Messrs. Waterlow & Sons' Offices, London-wall.—The American Elevator Company have been awarded the contract for one of their Standard Hydraulic lifts, to be erected in the new office building of Messrs. Waterlow & Sons (Limited), London-wall.

University College, London.—Professor C. T. Newton will commence his course of lectures on "Greek Inscriptions and Greek Myths" this Friday, October 9th, at four p.m. The public will be admitted to the first lecture without payment or ticket.

Bridges on the Furness Railway.—The Society of Engineers held its first meeting for the session 1885–6 on Monday evening last, at the Town-hall, Caxton-street, Westminster, Mr. Charles Gandon, President, in the chair, when a paper was read by Mr. Charles J. Light on "Opening Bridges on the Furness Railway." The author described in this paper the Buccleuch Dock Bridge, a double-leaf swing bridge, carrying the railway and a carriage road and two footways across a water passage, 80 ft. in width, between the Buccleuch and Cavendish docks at Barrow-in-Furness, and the Ulverston Canal Bridge, a traversing bridge carrying the Bardsea Branch of the Furness Railway, at a sharp skew, across the canal. Both were designed for Mr. F. C. Stileman, the Chief Engineer of the Furness Railway, and have been erected and in use for some time. The points of special interest in the Buccleuch Dock Bridge were the "spring girders," which the author believed to be a new mode of construction for swing bridges, and one possessing great advantages, the chief of which were the ease and rapidity with which the bridge was opened or closed (a point of the highest importance for railway purposes), while it rested when loaded, not upon rollers, but upon solid bearing-plates, and those at the coping of the water-way, the clear span being thus reduced to a minimum. The paper described fully these spring girders and their connexions with the main girders of the bridge. It also gave the results of the testing to which they were subjected before being put in place, and stated that during the six years since the bridge was completed there had been no occasion to use the adjusting apparatus provided to meet any permanent set in the spring girders. In the Ulverston Canal Bridge the novelty was stated to be the arrangement by which the bridge traverses at right angles to the canal, reducing to a minimum the clear space of the girders, their weight and the extent of traverse. The author showed the value of these reductions in the case of an opening bridge crossing at a skew (in the present instance) of 48 deg.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	10	0	7	10	0
Teak, E.I. ....load	12	10	0	15	10	0
Sequoia, U.S. ....ft. cube	0	2	6	0	2	9
Ash, Canada ....load	3	0	0	5	0	0
Birch „	3	0	0	4	10	0
Elm „	3	10	0	5	0	0
Fir, Dantsic, &c.	1	10	0	4	10	0
Oak „	3	0	0	5	0	0
Canada	6	0	0	7	0	0
Pine „ red	3	0	0	4	0	0
„ yellow	3	15	0	5	5	0
Lath, Dantsic ....fathom	5	0	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Wainscot, Riga....log	3	0	0	4	10	0
Deals, Finland, 2nd and 1st...std. 100	8	0	0	9	0	0
„ 4th and 3rd	6	10	0	7	10	0
Riga	7	0	0	8	10	0
St. Petersburg, 1st yel.	10	0	0	17	0	0
„ 2nd „	8	0	0	9	15	0
„ white	6	10	0	11	0	0
Swedish....	7	0	0	17	0	0
White Sea	8	10	0	19	0	0
Canada, Pine 1st	18	0	0	32	10	0
„ 2nd	12	0	0	18	10	0
„ 3rd, &c.	7	0	0	10	10	0
„ Spruce 1st	9	0	0	12	0	0
„ 3rd and 2nd	6	10	0	8	0	0
New Brunswick, &c....	5	0	0	7	10	0
Battens, all kinds	4	0	0	13	0	0
Flooring Boards, sq. 1 in.—Prepared, first	0	9	0	0	13	0
Second	0	7	6	0	8	6
Other qualities	0	5	0	0	7	0
Cedar, Cuba....foot	0	0	3½	0	0	4
Honduras, &c.	0	0	3	0	0	4
Australian	0	0	3	0	0	3½
Mahogany, Cuba	0	0	5	0	0	7½
St. Domingo cargo av.	0	0	5½	0	0	7½
Mexican „	0	0	4	0	0	5
Tobasco „	0	0	4	0	0	6½
Honduras „	0	0	4½	0	0	6½
Rose, Rio ....ton	7	0	0	17	0	0
Bahia....	6	0	0	15	0	0
Satin, St. Domingo .... ft.	0	0	8	0	1	0
Porto Rico	0	0	8	0	1	3
Walnut, Italian	0	0	4	0	0	5

METALS.						
Iron—Pig in Scotland ....ton	2	2	6	0	0	0
Bar, Welsh, in London....	4	15	0	5	2	6
„ „ in Wales	4	7	6	4	12	6
„ Staffordshire, London	6	0	0	7	0	0
Sheets, single, in London....	7	10	0	9	0	0
Hoops „	6	10	0	7	10	0
Nail-rods „	6	0	0	7	0	0
Copper—						
British, cke. and ingt. ....ton	44	0	0	45	0	0
Best selected	45	10	0	46	0	0
Sheets, strong....	54	0	0	0	0	0
„ India	0	0	0	0	0	0
Australian, fine cash....	0	0	0	0	0	0
Chili, bars „	40	2	6	40	10	0
Yellow Metal....lb.	0	0	4½	0	0	4¾
Lead—Pig, Spanish	0	0	0	0	0	0
English, com. brands	0	0	0	0	0	0
Spelter—						
Silesian, special ....ton	14	10	0	14	12	6
Ordinary brands	14	7	6	14	10	0
Tin—						
Straits	91	10	0	92	0	0
Australian	90	10	0	91	0	0
English ingots....	93	0	0	0	0	0
Tinplates—						
IC coke ....box	14	6	0	16	6	0
IX ditto	21	0	0	25	0	0
IC charcoal	17	0	0	20	0	0
IX ditto	26	0	0	27	0	0

OILS.	£.	s.	d.	£.	s.	d.
Linseed ....ton	23	0	0	23	15	0
Cocoanut, Cochin	31	0	0	32	0	0
Ceylon	27	0	0	27	15	0
Copra....	26	0	0	0	0	0
Palm, Lagos	30	0	0	0	0	0
Palm-nut Kernel	26	6	0	0	0	0
Rapeseed, English pale....	25	15	0	0	0	0
„ brown	23	5	0	0	0	0
Cottonseed, refined	21	10	0	23	0	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	7	0	0	10	0	0
„ Refined	8	0	0	15	0	0
Turpentine—						
American, in cks. ....cwt.	1	5	0	1	5	6
Tar—Stockholm ....brl.	0	19	6	1	0	0
Archangel....	0	11	6	0	12	0

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Design for Stained-Glass Window	Lawrence Dillon	20*l*....	Not stated	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Pipe Sewer, &c.	Bromley U. R. S. A. ...	A. Williams	October 15th	ii.
Laying-out and Planting Grounds	Met. Asylums Board ...	Pennington & Bridgen	do.	ii.
Earthenware Pipe-Sewer....	East Barnet Valley L.B.	F. J. Rumble	October 17th	ii.
Eight or Ten Houses, Victoria Docks....	Alfred Bayly....	....	October 19th	xiv.
Paving Streets	Vestry of St. Giles, Camberwell....	*Official*	do.	xiv.
Public Mortuary, Ebury Bridge	St. George's (Hanover-square) Vestry	do.	do.	xiv.
Filter Beds, Pure Water Tank, &c....	Horsforth Water Co....	McLandsborough & Preston	do.	ii.
Venetian Blinds at Asylum, Darenth	Met. Asylums Board ...	*Official*	do.	ii.
Portland Cement	Liverpool Corporation	do.	do.	xiv.
Paving Carriageways	Bermondsey Vestry ...	do.	do.	ii.
New Steam Flour-Mill, Warehouse, &c.	The Proprietors, Silloth	T. Taylor Scott	October 20th	ii.
Well-Boring	Tottenham Local Board	— De Pape	do.	xiv.
Drainage Works	Ramsgate Town Council	W. C. Barley	do.	ii.
Repairs, &c., Lambeth Old Workhouse	Lambeth Guardians ...	*Official*	October 21st	xiv.
Rebuilding Church, Chiswick	....	John Kelly	October 22nd	ii.
Construction of Sewers, Harefield	Uxbridge U. R. S. A....	*Official*	do.	ii.
New Post-Office, Warwick	Com. of H.M. Works ...	do.	October 24th	ii.
Station Buildings, Bodmin....	Great Western Ry. Co.	do.	October 27th	ii.
Subways (in lieu of Level Crossings), Risca ...	do.	do.	do.	ii.
New Mortuary Buildings	Vestry of St. Pancras...	F. Eggar	October 28th	xiv.
Concrete Sea-Wall and Promenade	Hartlepool Corporation	H. Mair	do.	ii.
Cooking Apparatus, Boilers, &c.	Guardns of St. George's-in-the-East	Wilson, Son, & Aldwinckle	October 30th	xiv.
New Post-Office, Windsor	Com. of H.M. Works...	*Official*	Nov. 2nd	ii.
Widening Railway and Re-modelling Station	Glasgow and Paisley Joint Railway	do.	Nov. 3rd	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor and Inspector of Nuisances	Lymington Local Board	60*l*.	October 14th	xix.
Sanitary Inspector	Vestry of St. Pancras...	120*l*.	October 16th	xix.
County Surveyorship, Ireland	Civil Service Com.	Not stated	October 23rd	xviii.
Accountant Clerk	do.	do.	October 30th	xviii.

TENDERS.

ACTON (Middlesex).—For the erection of thirteen houses, Montgomery-road, Acton Green, for Mr. Lavender. Mr. C. Nicholson Lailey, architect. Quantities not supplied :—

Balaam Bros....	£4,100 0 0
W. & F. Crosker	3,864 0 0
Linfield	3,614 0 0
Sabey & Son	3,611 0 0

BECKENHAM (Kent).—For the erection of a pair of cottages, in connexion with the new Athletic Ground. Mr. R. W. Collier, architect, Lincoln's Inn-fields :—

Pilbeam Bros., Beckenham	£850 0 0
Eustace & Son, Sydenham	753 16 4
Hollingsworth, Beckenham (accepted)	682 10 0

BELLINGHAM.—For works of water-supply, for the Local Authority. Mr. R. Grieves, Hexham, engineer :—

Marshall, Jarrow-on-Tyne....	£934 2 6 !
Robson, Blackhill....	586 13 6
Batty, Acklington	563 8 3
Brebner, Edinburgh	522 2 4
McDonald & Son, Hawick	515 1 7½
Smith, Hexham-on-Tyne	510 0 0
W. & M. Young, Jarrow-on-Tyne	496 7 5
Smith, Haltwistle....	491 17 2
Carrick, Durham	486 8 4
Maughan, Jarrow-on-Tyne	471 5 2
Aynsley, Bellingham	438 5 0
Carr, Hexham-on-Tyne (accepted).....	383 9 4 !

BOXMOOR.—For the erection of eight cottages and two shops, St. John's-road, Boxmoor, for Mr. E. Keen. Mr. W. A. Fisher, architect and surveyor, Hemel Hempstead :—

W. L. Sear, Hemel Hempstead	£2,121 17 6
S. Monk, Hemel Hempstead....	1,955 0 0
W. Sear, Hemel Hempstead....	1,9[illegible]0 0 0
J. Bushell, St. Alban's	1,869 0 0
T. F. Reavel, Hemel Hempstead ...	1,842 10 0
G. Burrage, Sutton, Surrey	1,718 0 0
J. Payne, Hemel Hempstead	1,589 0 0
C. Monk, Hemel Hempstead	1,465 15 0
A. P. Tomlin, Boxmoor (accepted)...	1,350 0 0

BROAD BLUNSDON (Wilts).—For Hospital Farmhouse, Broad Blunsdon, near Swindon, Wilts. Mr. Thos. S. Lansdown, architect, Swindon. Quantities supplied by the architect (proprietor supplying all building stone, lime, sand, and cartage) :—

Wiltshire, Swindon	£640 0 0
Henley, Swindon	554 10 0
Newcombe, Cirencester	545 0 0
Barrett, Swindon	464 8 9
Phillips, Swindon....	450 0 0
Williams, Swindon (accepted, subject to modification)....	410 0 0

FULHAM.—For roads and sewers on the United Land Company's Estate at Lillie-road, Fulham :—

Novell & Robson	£1,793 0 0
Hare....	1,695 0 0
S. Chafen	1,680 0 0
W. Harris	1,643 0 0
W. J. Botterell....	1,571 0 0
Clark	1,556 13 3
Peill & Sons	1,423 0 0
C. Killingback	1,421 0 0
T. Wainwright	1,405 3 6
J. G. B. Marshall....	1,404 8 0
W. Nicholls	1,313 0 0
Geo. Bell....	1,249 0 0
Tomes & Wimpey	1,169 0 0
S. & J. Saunders	1,155 0 0
R. Mayo	1,101 19 0
Neave & Son (accepted)	1,068 0 0
W. Kew	1,052 10 0

HERNE BAY.—For the erection of stable buildings, East Cliff, Herne Bay, Kent, for Mr. John Boosey, Mr. Robert Willey, architect, Ludgate-hill, E.C. :—

Welby....	£482 10 0
Adams....	450 0 0
Brown (accepted)	376 9 0

LONDON.—For additions, decorating, and sanitary works at 16, Half Moon-street, Piccadilly, for Mr. Robinson. Mr. D. Cubitt Nichols, architect :—

Wilkins & Kent	£815 0 0
Wetherilt, Lee, & Martin (accepted)...	745 0 0

LONDON.—For the erection of a new warehouse, Nos. 1 and 2, Great Chapel-street, Oxford-street, W., for Messrs. Jeffrey & Co. Messrs. Lansdell & Brede, architects, Bedford-row House, Great James-street, W.C.:—

Greenwood	£1,378 0 0
Brass	1,345 0 0
Patman & Fotheringham	1,273 0 0
Lamble	1,225 0 0
Mattock Bros.	1,175 0 0
Axford	1,159 0 0
Lawrance & Sons	1,150 0 0
Macey	1,145 0 0
Toms (accepted)	1,143 0 0

LONDON.—For rebuilding stables at Holloway-road, for Messrs. Cooper & Co. Mr. R. M. Shaw, architect, 22, Henrietta-street, Covent Garden:—

Vears & Co.	£1,300 less £83
Batt	1,225 ,, 80
Picton	1,190 ,, 94
Coombes & Son	1,166 ,, 68
Taylor	999 ,, 77

LONDON.—For alterations and additions to the Dunster Arms, East-road, Hoxton, for Mr. Godwin. Messrs. Stock, Page, & Stock, architects, 6, Duke-street, London Bridge:—

Wells	£900 0 0
Greenwood	899 0 0
Rider	878 0 0
Vears & Co.	833 0 0
Marsden	808 0 0
Wells & Co.	780 0 0
Jackson	767 0 0

SOUTHAMPTON.—For the extension of the Southampton Corporation Waterworks. Mr. Wm. Matthews, C.E., engineer:—

No. 1 Contract.—Well, &c.

W. Taylor, Reigate	£2,521 0 0
H. J. Sanders, Southampton	1,850 0 0
W. Hill, Gosport	1,825 0 0
Legrand & Sutcliff, London*	1,300 0 0
J. Jackson, Westminster (withdrawn)	1,200 0 0

[Engineer's estimate, 1,000*l.*]

* Accepted.

Contract No. 2.—Engines, &c.

Easton & Anderson, London	£18,141 1 3!
Goodfellow & Matthews, Hyde	16,850 1 3
The Lilleshall Company, Shifnal	16,235 1 3
Hathorn, Davey, & Co., Leeds	14,035 1 3
J. Watt & Co., Birmingham	13,360 0 0
W. & J. Yates, Blackburn	13,434 6 9
Stott & Co., Haslingden	12,215 1 3
Simpson & Co., Pimlico (accepted)*	12,106 11 3
Gimson & Co., Leicester	12,006 7 3
Wood Bros., Sowerby Bridge	11,937 9 9
T. Vernon & Co., Westminster	9,441 14 10!

[Engineer's estimate, 12,300*l.*]

* Guaranteed coal consumption 2·15 lb. per actual horse-power.

Contract No. 3.—Reservoir, &c.

Small & Son, Jersey	£7,097 0 0
J. Jackson, Westminster	5,744 0 0
Aird & Sons, London	5,3 0 0 0
Turner & Griffin, Leamington	5,269 9 5
Pickthall & Co., Merthyr	5,076 16 11
W. Hill, Gosport	4,865 0 0
Vernon & Co., Westminster	4,728 0 0
Jones & Fitzmaurice, Birmingham	4,69) 16 6
G. Moss, Oxford	4,410 2 9
H. Sanders, Southampton	4,397 0 0
Crook & Son, Southampton	4,347 0 0
Bull & Sons, Southampton	4,326 0 0
S. Stevens, Southampton (accepted)	4,188 0 0

[Engineer's estimate, 4,600*l.*]

Contract No 4.—Main Laying.

W. Taylor, Reigate	£6,488 13 6!
Small & Son, Jersey	4,290 0 0
J. Jackson, Westminster	3,48) 0 0
W. Maddock, Saltash	3,294 0 0
W. Hill, Gosport	3,242 0 0
Deville & Forrest, London	3,085 5 0
Aird & Sons, London	2,961 0 0
Walmsley & Co., Preston	2,747 0 0
Pickthall & Co., Merthyr	2,701 19 6
Bull & Sons, Southampton	2,679 0 0
H. Sanders, Southampton	2,578 0 0
Turner & Griffin, Leamington	2,521 9 6
Jones & Fitzmaurice, Birmingham	2,490 16 2
E. Follett, Southampton	2,397 0 0
G. Moss, Oxford	2,259 18 9
H. Gould, Ely (accepted)	1,995 0 6!

[Engineer's estimate, 2,200*l.*]

WALWORTH.—For the erection of artisans' dwelling-houses, &c., Elsted-street, Walworth. Messrs. George Lansdown & Harriss, architects:—

Sabey & Son	£3,189 0 0
Dearing & Son	3,18) 0 0
Canning & Mullins	3,167 0 0
J. Sawyer	3,100 0 0
Wood, Harris, & Co.	3,100 0 0
J. Tyerman	3,097 0 0
J. Marsland	3,075 0 0
R. Eldridge	3,074 0 0
E. & R. Evans	3,030 0 0
Tarrant & Son	2,995 0 0
H. & F. Croaker	2,936 0 0
Stayner & Son	2,877 0 0
W. & F. Castle	2,777 0 0
Geo. Parker	2,765 0 0
Pack Bros.	2,727 0 0
W. Smith	2,569 0 0

SPECIAL NOTICE. — Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

TO CORRESPONDENTS.

J. P. (below our mark).—C. S. & Co.—W. & B.—M. & Co.—S. J. M.—C. J.—F. & B.—P. & C.—F. J. S. (we should say, decidedly not; he may, of course, be "mason *and* bricklayer"—J. O. (it could, no doubt, be done, but it would be much more costly to get the same amount of heat from oil).—G. R. J.—R. B., Paris.—H. P. H.—A Subscriber (windows which have existed for twenty years have acquired a right of light; but how the legal right would be affected by pulling the building down and rebuilding on the same site is a point on which you had better seek legal advice.—T. A. (no space).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

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Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [Advt.

Bath Stone.
ALL DESCRIPTIONS OF BEST QUALITY
PICTOR & SONS,
BOX, WILTS. [Advt.

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Seyssel, Patent Metallic Lava, and White Asphaltes.
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(Late of the Firm of Messrs. Hudson & Carr),
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